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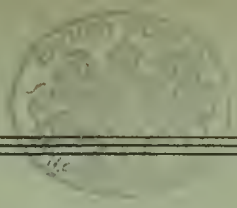

BURNLEY

LITERARY AND SCIENTIFIC CLUB

ESTABLISHED 1873

TRANSACTIONS

VOL. XXXIII

1915-16

MEMBER'S COPY

GEORGE ANDERSON (BURNLEY) LTD.
ST. JAMES' STREET.

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MDCCCCXVI.

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VOL. XXXIII

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MEMBER'S COPY

GEORGE ANDERSON (BURNLEY) LTD.
ST. JAMES' STREET

MDCCCCXVI.

Burnley Literary and Scientific Club.

Established 1873.

OFFICERS OF THE CLUB

Year 1915—16.

President :

H. L. JOSELAND, M.A.

Vice-Presidents :

Fred. J. Grant, J.P.
W. Lewis Grant
Jas. Lancaster, J.P.
Wm. Thompson
Arthur A. Bellingham
Frank Hudson, LL.B.

Hon. Treasurer : Frank E. Thornton.

Hon. Secretary : Arthur Lewis, B.A., F.G.S.

Committee :

John S. Mackie
T. G. Parkinson
G. S. Ritchie
G. A. Wood, M.A.
J. T. Lupton
T. Foster

RULES OF THE CLUB.

Rule 1 That the Society be named the "BURNLEY LITERARY AND SCIENTIFIC CLUB."

Rule 2 That the objects of the Club shall be the instruction and mental recreation of its members by means of original papers, discussions, and conversation of a literary and scientific character. Party politics and religious controversies to be excluded. That arrangements be made during the summer for excursions to places of historic and natural interest.

Rule 3 That the Club consist of Ordinary and Honorary Members and Lady Associates. That the Committee shall have power to accept the services of other than members.

Rule 4 That Associateship be open to ladies, who shall be elected as mentioned in Rule 7 and shall have the privilege of attending all meetings of the Club. They shall not take part in the management of the Club, nor shall they be entitled to introduce a friend.

Rule 5 That the Club meet on Tuesday evenings at 7-45, the meetings being weekly from September to April. Any meetings held in the summer months to be preparatory to the excursions.

Rule 6 That the Secretary shall commence the proceedings at each meeting by reading the minutes of the last meeting.

Rule 7 That candidates for membership or associateship be proposed and seconded at any meeting of the Club, and shall after the expiration of five days be considered as elected unless two members object to such election. Any such objection shall be stated to the Secretary in writing, signed by both objectors, within five days from the nomination; and shall as soon as conveniently possible thereafter be considered by the Committee, who shall have power to elect or refuse the proposed candidate. Candidates for honorary membership shall be proposed only after a recommendation from the Committee.

Rule 8 That the officers consist of a President, six Vice-Presidents, Treasurer, Secretary, and a Committee of six members, who shall manage the affairs of the Club; four to form a quorum Such officers to be chosen by ballot at the Annual Meeting, which shall be held on the first convenient Tuesday in April. Nominations to be received only at the three meetings next preceding the Annual Meeting.

Rule 9 That the reading of any paper shall not occupy more than one hour, the remaining portion of the time, up to ten o'clock, to be spent in conversation and discussion. No speaker to occupy more than five minutes, or to speak more than once, except by permission of the chairman.

Rule 10 That a Sessional Programme shall be prepared by the Secretary, and printed, in which the business of each evening shall be stated. All subjects proposed to be brought before the Club to be approved by the Committee of Management.

Rule 11 That each member shall have the privilege of introducing a friend* but no friend so introduced shall be allowed to take part in the proceedings unless invited by the Chairman, to whom the said person's name shall be communicated on his entrance into the room. The Committee shall have power to declare any meeting "Special," and to make such arrangements as to admission of friends at such meetings as they shall think proper.

Rule 12 That an annual subscription of 10s. be paid by ordinary members, and of 5s. by associates, and any person whose subscription is in arrear for three months shall cease to be a member of the Club.

Rule 13 That the Accounts of the Club shall be made up by the Treasurer to the end of December in each year ; and a Balance Sheet shall, after having been audited, and passed by the Committee, be laid before the members at the Annual Meeting.

Rule 14 That the Rules be altered only at the Annual Meeting in April, or at a Special Meeting ; in both cases a fortnight's notice shall be given to the members, stating the nature of the proposed alteration. The Secretary shall be empowered to call a special meeting on receiving a requisition signed by six members.

* No gentleman residing within the Parliamentary Borough, not being a member, will be eligible for admission. A friend is considered to be "introduced" (Rule 11) to the meetings of the Club when he or she attends with the sanction (by card or otherwise) of a member.

ANNUAL REPORT

1915—1916.

The Forty-first Annual Report of the Club herein presented by the Committee is a record of work done under unprecedented conditions. The heavy cloud of depressing uncertainty which darkened our horizon at the outbreak of war has lifted and revealed brighter rays of hope ; and the nation has now settled down to a state of war which suggests a protracted struggle. Military needs have become so gigantic that the life and habits of people have been vastly changed to satisfy these demands. It is especially gratifying therefore to your Committee in presenting this reivew of the Session to be able to state that, despite the war conditions, the character of that work has maintained the best traditions of the Club and thoroughly justifies the continuance of the meetings.

The Committee are pleased to note an increasing interest in the Club as shown by a better average attendance at the lectures. Notwithstanding the fact that those who are left behind to carry on civil life have immeasurably greater demands on their time, yet there was a higher average attendance than last year. For the session 1914-1915, the average attendance was 68 (36 members and 32 associates and friends) ; for the session just completed it was 72 (40 members and 32 associates and friends). This is the more gratifying for two reasons. Firstly, some members who take an active interest in the work of the Club are now serving in the ranks of war : and the Committee have elected these, Dr. W. G. Evans, Graham B. Kay, J. V. Kershaw, A. K. Lancaster, T. Edgar Lancaster, Dr. W. W. Munro, Maclaren Pounder, G. S. Ritchie, W. A. Welch, John Whitaker, to be honorary members of the Club during their period of active service. Secondly, the total number of members at present is slightly less than it was at this time last year. The actual figures at present are : 12 Honorary Members, 167 Ordinary Members, and 52 Associates, making a total of 231 members and associates, as compared with 10 Honorary Members, 175 Ordinary Members, 49 Associates, and a total of 234 members and associates at the end of Session 1914-1915.

The Committee regret to record that during the past year death has taken away one of the founders of the Club, Mr. T. P. Smith, J.P., and the Hon. Auditor, Mr. Thomas Proctor, A.C.A.

It was not without considerable misgivings that the Committee received the tendered resignation of the late Honorary Secretary, Mr. Frank Hudson, LL.B., who had given nine years' unstinted and devoted service to the work of the Club. His resignation was accepted with mingled feelings, of regret at his retirement, and of admiration of the ability which had characterised his tenure of office. The Committee were pleased with the response to the appeal for subscriptions which they addressed to you, by which you showed your approval of their desire to mark the Club's appreciation of the late Secretary's services.

The exigences of war have been more noticeable in the construction of the Syllabus than in any other aspect of the Club life, as may be inferred from the fact that twelve new lecturers have been introduced. Nevertheless the Committee in providing a wide range of topics to suit the diversity of taste, succeded in maintaining a high standard. And in order to attain one of the first objects of the Club, members in particular, and men closely connected with Burnley were invited to contribute to the Syllabus. One half of the lectures were provided in this manner. That you appreciate the efforts of the Committee in this direction is evident from the higher attendance on these evenings.

An analysis of the lectures delivered during the past session reveals the following interesting details : 8 were devoted to Travel, 4 to Literary Subjects, 3 to Science, 2 each to Education and War Topics, and 1 each to History, Art, and Music. At a time when war literature is so abundant, only two topics closely connected with the war were introduced into the Syllabus, and these were treated by two lecturers eminently qualified to deal with the subjects. In such a splendid series of lectures it would be invidious to single out any for special comment.

Lantern slides were used to illustrate fourteen of the lectures, and the expert manipulation of the lantern by the Honorary Lanternist, Mr. T. G. Parkinson, invariably commented upon by the lecturers, greatly enhanced the pleasure affored by the use of illustrations. It is, therefore, with much regret that the Committee view Mr. Parkinson's retirement from this position, in which he has displayed such skill and earned the well-merited confidence of the Club.

The Committee feel in presenting this report that their satisfaction will be shared by the members. Yet they wish to remark that the meetings could be improved if certain features were remedied. It is unfortunate that so many members leave the room immediately at the conclusion of a lecture. Very often an interesting discussion brings out the very best in a lecture, and provides an opportunity of raising questions which are in the nature of difficulties to individual members. To the Committee it would be a pleasure to hear fresh voices in these discussions, and to see a more active part taken by the members in the meetings. In this way would members obtain the maximum advantage for themselves and assist the Committee in increasing the usefulness, and promoting the best interests of the Club.

A. Lewis, *Hon. Sec.*

PAST SECRETARIES.

W. A. Waddington	1874—79
W. Lewis Grant...	1879—83
J. Mackenzie, M.D.	1883—84
W. Lewis Grant...	1884—87
T. Lloyd, B.A.	1887—88
William Thompson	1888—90
Thomas Hartley Roberts	1890—92
Arthur E. Grant	1892—93
T. G. Crump, B.A., M.B.	1893—98
T. E. Rodgers, LL.B.	1898—02
Thos. Crossland, B.Sc.	1902—04
Charles Hargreaves	1904—06
Frank Hudson, LL.B.	1906—15

SYLLABUS

OCTOBER TO DECEMBER, 1915.

Oct. 5—"The Formation of the Sun and Stars" .. ..
REV. A. L. CORTIE, S.J., F.R.A.S.
(Illustrated by the Lantern).

,, 12—"Education and National Efficiency" .. ..
A. R. PICKLES, M.A.

,, 19—"Delphi and the Greek Oracles" .. ..
REV. J. H. HOPKINSON, M.A.
(Illustrated by the Lantern).

,, 26—"The Water we drink" .. ..
HARRI HEAP, M.Sc., F.I.C., F.C.S.
(Illustrated by the Lantern).

Nov. 2—"Where Three Empires Meet—Poland" .. ..
SAMUEL WELLS, F.R.G.S.
(Illustrated by the Lantern).

,, 9—"Incidents in an Indian Tour" .. ROBERT S. HEAP.

,, 16—"Persia, Past and Present" .. .. W. LEONARD FLINN.
(Illustrated by the Lantern).

,, 23—"Masefield's Sea Chronicles" .. .. .. F. E. RHODES.

,, 30—"How to enjoy a good Picture" .. ..
BEN. H. MULLEN, M.A.
(Illustrated by the Lantern).

Dec. 7—"Sir Francis Drake" .. .. .. NORMAN R. LANCASTER.
(Illustrated by the Lantern).

,, 14—"Schubert as a Song Writer—an Appreciation" .. .. ..
REV. F. GORDON MEE.
(Illustrated by Selections)

SYLLABUS

JANUARY TO APRIL, 1916.

Jan. 18—"British Columbia and the Pacific Coast" .. ..
COUNCILLOR RICHARD LEIGH, J.P.
(Illustrated by the Lantern).

,, 25—"Submarines, Mines, and Torpedoes" .. ..
THOMAS WHYMAN.
(Illustrated by the Lantern).

Feb. 1—"Municipality and Medicine" .. ..
COUNCILLOR DR. J. W. CLEGG.

,, 8—"Yorkshire, its Folk-lore, Customs, and Broad Acres" ..
HENRY CROWTHER, F.R.M.S.
(Illustrated by the Lantern).

,, 15—"The Sahara and its Fauna" . .. .
GRAHAM RENSHAW, M.D., F.R.S.E.
(Illustrated by the Lantern).

,, 22—"Wanderings in Venezuela" .. ..
F. G. PERCIVAL, B.Sc., F.G.S.
(Illustrated by the Lantern).

,, 29—"Concerning Likes and Dislikes" .. ..
REV. T. WALTON MEREDITH.

Mar. 7—"The Balkans and its Peoples" .. ..
L. B. de BEAUMONT, D.Sc., F.L.S.

,, 14—"Education and National Efficiency" .. ..
THOMAS FOSTER.

,, 21—"Recital : Nicholas Nickleby" .. ..
REV. A. R. RUNNELS-MOSS, M.A.

,, 28—"A Trip to the Jötunheim".... .. ..
SAMUEL POPE, Recorder of Burnley.
(Illustrated by the Lantern).

Apr. 4—ANNUAL MEETING.

BURNLEY LITERARY AND SCIENTIFIC CLUB.

Dr. Treasurer's Account for the year ending the 31st day of December, 1915. Cr.

Previous Year.				INCOME			£	s.	d.	£	s.	d.
(172)	86	1	6	158	Members' Subscriptions (3 at 10/6)..		79	1	6			
(1)	0	5	0	7	do.	(half-session)	1	15	0			
(10)	0	5	0	2	Do.	(arrears, 1914)	0	15	0			
(4)	2	0	0	1	Do.	(paid for 1916)	0	10	0			
										82	1	6
(45)	11	5	0	47	Lady Associates' Subs. ..		11	15	0			
(5)	0	12	6	1	Do.	(half-session)	0	2	6			
				2	Do.	(arrears, 1914)	0	10	0			
				1	Do.	(paid for 1916)	0	5	0			
										12	12	6
	105	4	0									
	0	11	1	Bank Interest						1	2	2
	105	15	1							95	16	2
	8	12	8	Balance in hand, Dec. 31st, 1914						24	2	11
	114	7	9							£119	19	1

Previous Year			EXPENDITURE	£	s.	d.	£	s.	d.
£	s.	d.							
23	11	0	Expenses in connection with Papers	23	13	3			
6	0	0	Advertising	6	13	9			
5	3	7	Collector's Commission	4	15	1			
3	7	4	Postages	3	15	7			
4	13	1	Printing and Stationery	5	19	7			
10	10	0	Rent	11	5	0			
5	0	0	Reports of Meetings for Transactions	5	0	0			
21	0	0	"Transactions," Volume 32	20	5	6			
2	2	0	Manchester Geographical Society	2	2	0			
1	5	0	Hall-keeper	1	5	0			
7	7	10							
0	5	0							
£90	4	10					84	14	9
24	2	11	Balance in hand				35	4	4
£114	7	9					£119	19	1

FRANK E. THORNTON, Hon. Treasurer.
January 20th, 1916.

Audited and found correct,
G. A. WOOD, Hon. Auditor. March 16th, 1916.

TRANSACTIONS,

1915-16.

THE FORMATION OF THE SUN AND STARS.

(Illustrated by the Lantern).

By Rev. A. L. CORTIE, S.J., F.R.A.S. *October 5th*, 1915.

The lecture opened with a review of certain aspects of the solar system. Astronomers have established the existence of several remarkable concords among the bodies of which the solar system is composed. It was pointed out that—

(1) All the planets rotate on their axes in a counter-clock-wise direction

(2) All the planets revolve round the sun in the same direction as the sun itself rotates

(3) The orbits of the planets all lie in the same plane

(4) The distances of the planets from the sun are in accord with a certain fixed formula known as Bode's law.

These concords, the lecturer argued, can scarcely be fortuitous. They unify the solar system and strongly suggest that the bodies composing it belong to one family and perhaps have a common origin.

With this in mind and with the aid of long exposure photographs obtained by high-power telescopes, the audience was invited to survey the general stellar system. Attention was first directed to those blurred indeterminate patches of light known as *nebulae* and several photographic slides of great beauty were thrown upon the screen displaying their shapeless and filmy forms. These were followed by photographs of similar nebulous masses clearly revealing the existence of a certain amount of central condensation or "kernel." Other slides shewed the nebulous areas with the "kernel" more clearly defined and of starlike luminosity and in some the existence of a distinctly spiral form in the nebulous mass itself was revealed, with the stars strung on the spirals like pearls on a string. As this appearance is general, the connection between the stars and the nebulous spirals is probably physical and not purely optical. Further examples of stellar photography made it clear that in certain cases, series of stars and nebulous condensations take a spiral conformation when considered in relation to a well-defined and starlike centre.

The lecturer pointed out that this gradation—from shapeless filmy form, through nebulous nuclei, to starlike condensations related to a kind of central mass—would seem to suggest that we really have exemplified various stages in an evolutionary process. Just as an ordered series of relationships establishes the unity of our solar system, so the many examples of nebulous matter in all the various stages of a condensing process, would seem to establish an essential connection between the stars, as we know them, and the faint nebulous areas which only the high-power telescope can reveal. Spectroscopy confirms this connection for the stars and the nebulae give similar spectra—that is, though the materials are the same in the celestial spaces, there is a gradual complexity of arrangement and appearance as we pass from the nebulae to the white and yellow and on to the red stars—through helium, hydrogen, calcium, and metals to the chemical compounds. What differences there are in these spectra are due to differences in the " age " of the bodies, *i.e.*, to differences of temperature. For it should not be overlooked that, in the nebulae and in the stars, among which we must class the sun, there must be going on during the working out of this evolutionary process a tremendous expenditure of energy which is gradually dissipating itself in heat and luminosity.

Apart from its main theme, the lecture was remarkable for the striking way in which the great immensities of space and distance were vividly brought home to the minds of the audience. The vast field of stellar photography and telescopy was well illustrated by the fact that whereas about 6,000 stars were visible to the naked eye, it was certain that not less than a hundred million stars could be distinguished by the great telescope of the Lick observatory. Again, something of the tremendous distance of the stars from the earth was revealed when the lecturer incidentally remarked that a sphere, of radius equal to a million times the distance of the earth from the sun, would probably contain only about eighteen stars ; and lastly, after reminding his audience that light travels at the rate of 186,000 miles per second, the lecturer said that, if by some universal catastrophe the whole of the stars were instantly rendered extinct, four and a half years would elapse before the inhabitants of earth missed the nearest of the stars, and 38,000 years before they would observe the disappearance of the last.

EDUCATION AND NATIONAL EFFICIENCY.

By A. R. PICKLES, M.A. *October 12th*, 1915.

Mr. Pickles first of all stated that no great national upheaval could fail to touch more closely the great problem of the educational needs of our homes ; and of all domestic subjects brought into prominence by the war, that of education was easily foremost. Optimists had declared that education had saved the State, while, on the other hand, pessimists proclaimed that there was much lacking in our educational system. Still it was beginning to be recognised that it was foolish to allow education to be crippled. Public opinion was more surely grasping that British tenacity significant of the people of the nation. The latter numbers were small compared with our world-wide interests, and we must therefore make up in the quality of our people what we lacked in numbers, by developing every individual to the height of his capacity. It would be unwarrantably foolish in this great national crisis to confuse the personnel of education with economy. Next to the actual necessaries of life and ammunition of war, education ought to be our very first concern.

Mr. Pickles then went on to give examples of the success which had attended education in the last fifty years, and he also gave some startling examples, from various sources, of educational shortcomings. We had, he said, made great educational progress since 1870, and this progress had given us some fine new material in our people. We had, however, lost in carefulness and accuracy and commonsense, because we had dulled the sense of responsibility in the parent and the sense of effort in the child. To say that our education as a whole had failed was a kernel of truth covered with a thick husk of fallacy. Mr. Pickles followed with a strong plea for more efficient and more effective physical training in the school. We had not yet given half the attention to physical training which it deserved. At the time of the Boer War, 8,000 out of 11,000 Manchester men who offered themselves for the Army were rejected, and quite recently the Lord Mayor had said that if all had been able to pass, Manchester would have sent 200,000 men to the new Army instead of 90,000. There

should be compulsory physical training for every boy in the land from the age of ten or eleven to about seventeen or eighteen. Some hard things had been said about mental training. The greatest hindrance to education was the indifference of parents and the indifference of pupils. There was no lack of ability or lack of opportunity, yet only a few showed any real love of learning or ardent energy in pursuit of it.

The removal from the schools of the old annual examinations rid the schools of some great evils, and also withdrew some of the effective stimulus of individual effort in the school. The present system of instruction had its good points, but it was too accidental in its nature, and was prone to err grievously in its estimates. We had probably gained in our general intelligence; we had gained, too, in our qualifications; but we had decidedly lost in our sense of honour, in definite purpose in our patient preparation. The average child of the present day had few incentives to exertion, and so long as he avoided extreme misconduct and paid the minimum of attention to his teachers, he could enjoy a very comfortable life, free from effort. We should have to go back to some of the drudgery of education—getting to know one thing at a time, and knowing it well. We should attempt fewer subjects, and wrestle with those we did attempt until we forced from them their blessing. Developments of character and intelligence were of the first value, and in a school where honest hard work was carried on regularly the character of the pupils was in a great measure assured. A child was not educated by doing anything anyhow, but by doing something well.

The bulk of our educational wastage, said Mr. Pickles, lay between the years of 13 and 17. Children left school just as intelligence began to broaden and character to expand, and we were losing half the value of the elementary schools. A large number of those who attended our continuation schools were those who had done well at school, and those who most needed continued education used the continuation school least. A system of compulsory continuation schools was needed. Part time at the right time was good, and the conditions of industry should be adapted to meet the needs. In our secondary schools the effect of early leaving was largely to cripple their usefulness, especially in those higher forms where education really began to tell. A secondary school was not a place to " put on a polish " in twelve months or two years. We should have much to do in the next few

years in shaping higher education so as to direct it more into our industrial, commercial, and technical activities, and possibly in developing the scope of the secondary schools to meet this end.

But when all our organisation had been done, what most counted was the teacher. Really successful teaching demanded from the teacher great skill, energy, and perseverance, much devotion and self-sacrifice. Teaching could be made the hardest of all occupations or the easiest. Given self-sacrifice and the rest, teaching, though hard, was full of absorbing interest, or it could be conducted in a very perfunctory fashion. Under present-day conditions, given a head teacher with a high standard for the work of himself and his staff and his children—a standard pursued with devotion and self-sacrifice—and you could not give too much honour and emolument. For over fifty years we had been building a system of national education which still had many imperfections and many *lacunæ*. We were learning the value of thoroughness of education, and we should need greater effort devoted to national efficiency. The problem for us was to get out of the Britisher the best of his capabilities, and to cultivate to the highest possible extent individual and collective efficiency, and to direct all our efforts to true and noble ends, and Britain would still stand four square to the blasts of the murderous Hun.

DELPHI AND THE GREEK ORACLES.

(Illustrated by the Lantern).

By Rev. J. H. HOPKINSON, M.A. *October 19th*, 1915.

The subject was approached by the mention of the various ways in which the term "oracle" is used; sometimes the word denotes a place, sometimes the answer given by the deity associated with the place; sometimes, the god himself. There were, said the lecturer, in ancient Greece considerably over two hundred oracles though not all of them were of importance. Many of them were concerned with petty and domestic questions and some inscribed leaden strips found at Dodona were instanced as shewing the trivial nature of the queries; but certain oracles, notably that of Delphi, were sought to solve problems of public and national import requiring a wisdom such as neither statesmen nor philosophers could give.

By the aid of lantern slides the lecturer described the country round Delphi and Mount Parnassus. Ancient Delphi itself standing high up on a ledge or shoulder of Parnassus and near the gorge of the Pleistos, must have been invested by its natural surroundings with a peculiar and mysterious sanctity. Add to this, the fact that Parnassus itself is the geographical centre of Greece and the pre-eminence of this Delphic shrine of Apollo will be quite understood.

The sanctuary itself consisted of a miscellaneous collection of buildings, set close round a central shrine. The temple itself stood elevated on a terrace and was approached from the outer gates of the sanctuary by a winding way. On either side this way were to be found statues, porticoes for shelter and rest, an open-air altar, various forms of dedications to the gods and, most striking of all, the miniature temple-like buildings known as treasuries. The latter were built by the individual Greek states and were intended to house special offerings to the gods, and the robes and other appurtenances of ritual to be donned by those seeking the wisdom of the oracle within the sanctuary. Two of the most interesting examples were treated at length; the Treasury of the Athenians, though damaged in past centuries

by stones which have fallen from the cliffs above, has been partially restored through the skill and industry of French savants and lantern slides shewing the Doric pillars, the metopes representing the labours of Hercules and the bright colouring of its stones were thrown upon the screen; the other example—the Treasury of Cnidus—was of rather different style and in its richness of sculptural decoration displayed the taste of the Asiatic Greeks rather than that of the Athenians.

The temple was next described and illustrated in detail. Within the portico were inscribed wise sayings of the Greeks ("It is hard to be good," "Water is best," "Know thyself," "Go bail and be sorry for it"), while over the inner doorway was the mysterious symbol, E, the precise significance of which has never been satisfactorily explained. One theory interprets it as equivalent to "if" as though questioning the presence of the god, while another construes it as "thou art" thus definitely asserting the god's existence. Beyond this portal lay the main hall of the temple containing the "seat of Pindar" and beyond it an inner chamber of the priests containing the venerable "omphalos" or central stone of the world. Below this chamber was the rift in the rock—the reputed cause of the existence of the oracle. The lecturer stated that, though search had been made in the rock underneath the building, no trace of any rift had been discovered. Literary evidence is so strong however, that one cannot doubt its former presence and it must be presumed that some seismic disturbance has since obliterated all trace of it.

The subsequent portion of the lecture was devoted to the manner in which the oracle was delivered. On certain days of the month the enquirers gathered and handed in their questions to the priests of the sanctuary. Deep down below the floor level sat the priestess—an unlettered peasant—who, having prepared herself by the drinking of water and by chewing the leaves of the laurel, sat over the rift in the rock until the fumes and vapours which rose therefrom produced a kind of intoxication. The priests then propounded to her the questions submitted and from her incoherent cries culled answers which were delivered by them in hexameter verse to the anxious seekers. It is noteworthy that none were sent away unanswered through the practical value of the answers varied very considerably. Some conveyed really valuable advice, some were ambiguous or purposely misleading or mysterious, others were tragically ironic. In conclusion the lecturer dwelt for a time upon the influence of

the oracles on Greek national life. As far as their influence is traceable it can certainly be said that they achieved some valuable ends. The oracles encouraged emigration and the founding of new colonies, they fostered humane principles at a period of the world's history when methods of strife were stark and cruel; but, above all, oracular wisdom made for moral righteousness, it enjoined respect for oaths and for women, it warned the malefactor, it comforted and encouraged the penitent.

THE WATER WE DRINK.

(Illustrated by the Lantern).

By HARRI HEAP, M.Sc., F.I.C., F.C.S. October 26th, 1915.

The most striking and yet the most fascinating phenomena of nature are wrought by water, and without it life itself would be extinct. In a perfectly pure state water was never met with in nature, and could only be so obtained by the most refined operations. Impurities in water were derived from the materials—solid, liquid, or gaseous—with which it came in contact, and they might be present either in a state of solution or suspension or in both conditions ; but owing to the great solvent powers of water all its natural forces contained matters in both states. Waters might be conveniently classified according to their origin :—(*a*), rain, snow, hail, hoarfrost, and dew, containing only impurities which they derived from the atmosphere ; (*b*), upland surface waters, which contained chiefly the remnants of decomposing vegetable matter ; and (*c*,) surface waters from cultivated land or partly cultivated land which were rich both in organic matter and living organisms. Shallow well waters were similar in their nature to surface waters, but deep wells generally offered the characteristics of mineral waters. These—thermal, saline, sulphated, alkaline, iron, or chalybeate—were interesting more as medicinal waters than as types of the so-called drinking waters.

The chief sources of drinking supplies were either surface waters, lake waters, well waters, or artesian well waters. Upland surface, cultivated land, and shallow well waters presented more or less the same features ; whilst another class, with similar properties, was formed by the deep well and the artesian well waters. Primitive people draw their supplies from the rivers, wells, lakes, or springs, but where these supplies were periodic they had either to seek other supplies or resort to storage in times of plenty. The Carthaginians and the Romans drew their supplies direct from the freshly-thawed waters of the high mountains, and led them down to their cities in huge aqueducts. In England we generally resorted to artificial reservoirs, but of late we had bridled the natural lakes and conducted the waters, which were, so to speak, pure supplies, by the less picturesque

subterranean aqueducts. Later still, through sheer shortage and economy, we had had to draw upon the waters of our short, rapid (and polluted) rivers, but only had this been possible with the advance of science, which had enabled us to purify these waters, and so amend our supplies to our ever-increasing needs.

Rain and snow waters were generally fairly pure, in that they only contained dissolved atmospheric gases ; but when they passed through atmospheres polluted by our industrial smokes, and other effluvia, which were carried by the winds for miles and miles, and all manner of organic and inorganic matters absorbed by the clouds, rain waters were contaminated before they reached the earth. The nature of the land upon which the rains fell also conditioned the quality of the water, which now began to form our streams and rivers. Open lands, over which both man and beast were free to roam, offered further sources of contamination, but on enclosed areas for gathering, these causes of contamination were dispensed with in some degree. Then the nature of the land itself played another rôle. Land where vegetation had flourished offered the decomposing organic vegetable matters to the water ; whilst rocky mineral areas offered saline matters to the waters. These agencies thus produced a certain amount of pollution for the water which served as the food for the lower forms of animal and vegetable life. Of the waters which sank into the ground, as distinct from the river waters—these, because of longer period of contact, and meeting with more variety of earthy matter, became more heavily charged with both suspended and dissolved bodies ; and so we found the deep wells and the springs always to contain more solids than the surface waters. The constituents of the various strata through which the water percolated conditioned the nature of the saline contents of the water, and determined the composition and extent of the hardness of the water—which was a most important factor. Simultaneously with all these processes of addition to the water, we had the natural agencies at work for purification. Purification consisted essentially of an oxidisation or a moist combustion—that was, a striving of the forces of nature to resolve dead organic matter into mineral matter. This process was brought about by natural agencies, such as the lower forms of vegetable and animal life, and ended when there was nothing left in the water to support the existence of those forms of life, whilst the gaseous oxygen of the atmosphere we breathed accomplished the final oxidisation.

During the percolation of water through the layers of soil a most effective purification took place. Suspended matters were removed, and the matters in solution were further oxidised; and the deeper the water sank into the bowels of the earth, the more was it likely to become freer from the smaller forms of life which were spoken of as microbes. One of the previously-mentioned types of water generally served some community as a supply. In some cases the water was utilised in its native condition, in others it underwent a partial treatment, and yet in others it was subjected to a prolonged and intricate treatment before distribution to its consumers. The question as to the nature of the treatment which a water ought to undergo before usage, depended almost entirely on the nature and composition of the particular supply. Aesthetic tastes preferred a water which was clear and sparkling, to a dull-coloured water, such as one generally found in a moorland supply; but, on the other hand, the "spring" or the calcareous "deep well" supplies, which were, as a rule, clear and sparkling, were not suitable, nor yet economical, for domestic or industrial usage.. Again, the heavily-charged river waters were both ugly and extravagant when they were used without treatment. These remarks, said the lecturer, were made on the assumption that the water was, of course, primarily safe to use for drinking purposes.

All the objections he had made could be overcome by a system of chemical treatment, followed by artificial filtration, or, in some cases, by merely one of these processes. Where it was necessary to draw the supply from a polluted source, more stringent and more costly methods, of course, had to be adopted. Even with supplies which were considered to be unpolluted, it was oft times more economical to regard it as polluted, and to subject the water to the same rigorous treatment as would be meted out to a known contaminated supply. In certain districts, after a series of epidemic outbreaks, experience had persuaded them of their false economy, and they now treated their water by processes exhibiting all the skill which science could suggest. Accidental contamination of a supply could occur at any moment, and it was only by carefully thought-out treatment that these grave dangers might be overcome.

There were many methods which could be adopted for the artificial purification of waters, the most important being sedimentation, sand filtration, mechanical filtration, aeration with air or ozone, the treatment with chemicals and also with bleaching powders. Sterilisation with ultra

violet light, and submitting the water to periods of storage, were amongst the recent developments. In most cases two or three of these processes were applied to one water, with the idea of removing as much of the undesirable matter as possible, producing a water of the required composition, and rendering the water as free as possible, from any chance of containing those organisms which gave rise to specific diseases. Sedimentation basins were used for removing the grosser suspended impurities, and, at the same time, the water was slightly aerated, and, if need be, might at this stage be treated partially, so as to remedy any injurious feature. Sand filters were used with the object of removing as much of the suspended matter as possible, so that the water issuing from them contained as few living forms as possible, and that the organic matter in solution should be liable to easy oxidisation, and eventually removed altogether. When the organic matter had been perfectly removed, the water contained no appreciable quantity of those compounds which were capable of supporting microbic and the lower forms of animal life ; and so, should any accidental contamination occur at this stage, the organisms so introduced would have a less chance of propagating, there being only food for them such as was introduced along with them in the actual pollution.

Mechanical filters were used, with much the same object as the slow sand filters, but it was general nowadays to accomplish a partial chemical treatment of the water at the same time. Aeration with air was a pure attempt at oxidisation, so as to reduce the amount of soluble organic matter, and consequently make the water such that it was difficult for animal life to flourish in it. Oxidisation was an intensification of the simple aeration treatment, but was probably more efficient. Chemical treatment with chlorine or chlorine compounds was directly a poisoning or a killing off of the smaller forms of life, and eventually an oxidisation due to the nascent oxygen liberated. This method had its objections, in that the chlorine or chlorine compounds produced in the water were nauseous in flavour. One of the most recent attempts at sterilisation of a water supply, after treatment, was by making use of ultra-violet light. These particular light rays were deadly in their effect on the smaller forms of life, and in order to dispense with these germs the water containing them was made to pass, in thin layers, over an area upon which these light rays were focussed. The advantage of this method was that nothing was added to, or abstracted from, the water, and

where electricity was cheap it was very economical. But, of all the artificial treatments to which water was subjected, storage was probably the most simple, and yet the most effective. It had been found that by storage the organisms gradually diminshed, and that the pathogenic types perished fairly early, being unable to survive under these conditions for any prolonged period. On distribution, the water might be altered by further sedimentation in the service pipes, or growths might begin to flourish which altered the character of the water as regarded its appearance, taste, or odour, or the number of organisms it contained ; but it was extremely unlikely and seldom that any further organic contamination took place after the water had left the service reservoir.

There were certain diseases which were conveyed by water, and known as water-borne. Water played its part by carrying the organisms producing the disease, and such examples were cholera, dysentery, and typhoid fever. Again, the water contained small organisms, spoken of as animalculæ, which acted as intermediate hosts to certain parasites, and we had the diseases resulting from the guinea worm and the malaria parasite. Waters carrying the ova and embryos of certain worms were known to produce diseases in Egypt and India, but these were not known, fortunately, to occur, in England. Some waters contained fine suspended matters, which acted as intestinal irritants, and so caused diarrhœa. Others contained dissolved salts, and were generally characterised by producing diarrhœa, whilst others produced constipation. Others, again, were said to give rise to conditions of goitre. Lack of certain salts in some waters had condemned them as being unsuitable for young children. Another important matter, which often was overlooked, was lead poisoning, caused by the water attacking the leaden service pipes, and so becoming contaminated with lead compounds, either in solution or in suspension. The waters which were naturally the purest were generally those which exhibited this dangerous quality in the most marked degree Treatment for a defect like this, whilst simple, required to be carried out with caution, and was in the end efficiently economical, because of the great blessing which it conferred on the consumers.

WHERE THREE EMPIRES MEET—POLAND.

By SAMUEL WELLS, F.R.G.S. *November 2nd*, 1915.

The lecturer at the outset stated that his purpose was to discuss Poland and its peoples as they were in normal times and not Poland and the part it has played and is playing in the present European War.

Poland consists of two geographically distinct areas. In the north are found enormous windswept plains with here and there ruined towers—reminders of troublous times long ago. To the south, in the Carpathian area, lies a rocky and mountainous region and a land of almost illimitable forest through which the lecturer on one occasion travelled for sixty-four miles without meeting with so much as a simple hamlet. Many of the roads which traverse Poland can only be described as execrable and this in the lecturer's opinion was one of the reasons for the lack of civilization and advancement in the areas remote from the larger towns. Moreover the country is practically isolated and considerable difficulty is put in the way of travellers seeking entry. All round the frontiers a triple line of guards is posted and no unauthorised person is allowed to cross the border.

In the middle ages Poland was of much greater extent than it is now and it formed for many centuries a barrier between the civilized west and the savage hordes of the east. Then came the period when the greater part of the country was snatched from its rightful ruler and shared by the Russians, the Prussians and the Austrians. The Poles in their defensive warfare were led by the great patriot Kosciusko, who was honoured in after years by a monument unique in its nature, a huge mound of earth on the outskirts of Cracow, to which people from every part of the original Poland contributed each a handful of local soil. Poland has passed through many anxious periods and to this day many of the churches are surrounded by fortifications—for, in ages long past, they formed sanctuaries for stricken people harassed by the terrors of invasion.

Of the Polish towns, the lecturer spoke at some length of Cracow and Warsaw. In Cracow the whole history of Poland may be said to be centred although many of the relics of the country's past greatness have been removed to Russia. In Cracow the first university established in Europe was to be found and the Cloth Hall in the market place was, in the middle ages, one of the great marts of the western world. The town possesses no less than thirty-nine important churches, of which the Cathedral with its lavish display of wealth and magnificance is especially noteworthy.

Warsaw is an important centre of trade and fashion notwithstanding the fact that the authorities have permitted no new buildings to be erected since 1863. Mr. Wells spoke enthusiastically of the pleasure-park at Praga, near Warsaw, where public entertainment on a lavish scale is provided all the year round at a very moderate charge for entrance. He referred also to the Polish Jew who, in Warsaw, is of quite distinct type and still wears the corkscrew curls so reminiscent of jewry in the middle ages. Warsaw has, in one of its public squares, a fine example of the caravanserai where the empty and unfurnished rooms for the temporary accommodation of travellers startle the unwary pilgrim who expects in a capital city the luxurious service of the modern hotel.

The lecturer's remarks upon the people of Poland were especially interesting. Originally there existed a true Polish type, belonging to one of the branches of the great Slav family of peoples. But in the middle ages vast emigrations took place and a mixed stock representing many of the contiguous races gained a footing in the country. Not infrequently it may be found that a Polish village to-day contains three distinctly "foreign" types—Hungarian, Saxon, and Gypsy. The peasantry of Poland are the poorest people in Europe; in the rocky region many of the people are merely cave-dwellers and the children in all parts of the country are scantily clad and poorly tended. Not only are they the poorest of European peoples, but they are also the laziest. Inured for centuries to serfdom, they were unfitted for the responsibilities of freedom when freedom came. Mr. Wells recounted how, in 1861, forty million Poles were set free and assigned twelve acres of land per man. In twenty years the twelve acres had become five and this proved totally insufficient to provide for family needs. Nor in the meantime had the people paid any appreciable proportion of the very moderate sum settled upon as the price of the land under the original agreement.

Occasionally in the course of the evening the lecturer gave his audience interesting glimpses of Polish manners and customs. He told the legend of the Polish princess whose tragic death in Cracow some two thousand years ago has been commemorated annually ever since by the women of Poland. The annual blessing of the animals by the parish priest and the consecration of the food intended for the Christmas feasts were described. The curiously low status of the dog and the strange ritual governing matrimonial arrangements were referred to. The lecturer also spoke of the caves of the rocky region being used for sepulture—the bones and skulls being arranged in orderly manner on shelves and in recesses, all being marked, registered and made easily accessible to the friends of the departed.

INCIDENTS IN AN INDIAN TOUR.

(Illustrated by the Lantern).

By ROBERT S. HEAP. *November 9th,* 1915.

Guided by the axiom that "personal" experiences constitute for us the only abiding reality, the lecturer emphasised throughout what proved to be a most delightful evening, just those incidents of his journey which touched his own imagination most nearly and in which he individually was most intimately concerned. The lecture was not therefore of the type which records with minute fidelity all places visited, distances travelled, and things seen; it was rather, a series of detached impressions from the store gathered by an impressionable and acute mind when confronted by wholly new experiences.

Mr. Heap visited India during December and January some two or three years ago. Passing lightly over the earlier incidents of his journey, he told how, when in the Straits of Bonifacio, a "wireless" informed the passengers that Stromboli was in eruption. He arranged to be called to see it, as the ship passed in the night. It proved a sight not easily forgotten for the molten lava in the crater was reflected in the cloud which seemed to hang over the mountain and so produced an effect at once fascinating and weird. Messina, which was passed the following dawn, displayed to the traveller's view some evidence of recent earthquake havoc in the number of chain-bound houses which were clearly visible through binoculars. At Port Said the gateway to the East, Mr. Heap witnessed by night the interesting process of coaling ship, and he gave a most vivid word-picture of the scene presented by the swarthy figures moving in steady and regular order, from wharf to deck and back to wharf again, amid the flare lights and the night shadows.

After an ideal voyage across the Indian Ocean—a voyage during which ship and deck seemed for days quite motionless—the outer sentinel light which guards Bombay harbour was observed one night as our lecturer was standing on deck with the watch. On landing next day the first impressions gathered were of the seething crowds, the varied colours

and the unceasing vivacity which are everywhere in evidence. While in India Mr. Heap was fortunate in having as guide, philosopher and friend, a Parsee, through whose kind offices he saw phases of Indian life which the ordinary tourist seldom or never sees. He was in this way privileged to attend a Parsee baptism and during the ceremony was accorded a place of honour. In a pithy and picturesque way the lecturer recounted how the aged priest, surrounded by elders, admitted the novitiate to full communion. The ritual was described—the burning of sandal-wood, the donning of the "sudra," the making of presents to the boy, the casting of garlands upon the guests. On another occasion Mr. Heap was an invited guest at a large Parsee reception given in honour of Lord Brassey. It took place on a January evening and in the grounds of the house were English military bands playing, among other items, selections from "The Gondoliers." In the reception room itself, the traditional pearl and gold of the opulent East seemed typified in the lavish and gorgeous display of dress and jewels which met the eye on all sides. During the evening our lecturer was accorded the honour of a special personal introduction to Lord Brassey and a few days later enjoyed Lord Brassey's hospitality on board the famous "Sunbeam." Mr. Heap recounted to the Club, some interesting personal memories which his lordship retained, of Mr. Gladstone.

The lecturer then went on to speak of the Taj Mahal, at Agra, and, in exquisitely chosen words, very skilfully pictured something of the witchery and glamour of that noted shrine. It is a building the charm of which increases with familiarity, for the mind needs time and preparation before it will register all the finer distinctions which here lie open to it. To see this wonderful edifice at its best the traveller should arrange to visit it during the period of full moon. He should first see it in burning sunshine, then at the sunset hour when it appears like warmly tinted ivory, and again at moonrise when its dome seems to assume a mysterious fullness and to be enveloped in a blue translucent haze. Though the Taj Mahal cost some three or four hundred million pounds to build its great scenic charm lies not so much in the costly detail of its fabric as in its proportions, its setting, and the charm which the varied play of light and atmosphere create about it.

In the course of the evening, various photographs taken by the lecturer himself at different points in his tour, were thrown upon the screen. They consisted of snapshots of

typical scenes in Indian life, pictures of Ahmedabad, and scenes in Delhi, Cawnpore, and Lucknow, closely connected with the momentous events of the Mutiny in 1857. One slide was especially noteworthy and was obtained under exceptional difficulties—a picture of the underground chamber from which Jessie Brown heard the welcome skirl of the Scotch pipes as the relieving force entered Lucknow.

PERSIA.

(Illustrated by the Lantern).

By LEONARD FLINN. *November 16th*, 1915.

Mr. Flinn began his lecture by calling attention to the geographical features of Persia. Two-thirds of the country consists of a stony and salt desert ; to the east of Teheran is the most arid desert in the world and what few villages there are in this region are little more than oases in the vast and silent waste ; there are no railways in Persia and only one navigable river, while in all parts of the country the roads are mere tracks. The sole seaport in Persia is Bushire and even here only lighters of shallow draught can enter—ships having to discharge their cargo some seven miles away from the port. Persia is divided politically into three "spheres of influence"—the Russian, the English, and the neutral areas.

The history of Persia as a nation goes back some 2,500 or 3,000 years, though her native poets and historians in their myths and legends penetrate still further into the " dark backward and abysm of time." The lecturer passed under review the various dynasties which have held sway in Persia and illustrated his remarks by slides shewing ancient sculptures of dynastic notabilities, the ruins of Persepolis, old palaces and monuments, many of which closely resemble in their workmanship, the main characteristics of Assyrian architecture. The story of Persia is the story of a country which has ever been the prey of foreign agression ; it has often been overthrown but in spite of all its varying fortunes, the character of its people has been very little changed. The Persians, said the lecturer, are suave, eager to be agreeable at all times and in all circumstances, but much given to lying and deception. As far as mendacity is concerned their moral code is well represented by the saying of the greatest of Persian poets, Sadi, " Falsehood mixed with good intentions is preferable to truth, leading to strife."

By the aid of lantern slides Mr. Flinn took his audience over one of the routes he had travelled when visiting Persia in his capacity as an Eastern trader. From London he went by rail to Tiflis and thence by road to Tabriz, Teheran, Ispahan, Sultanabad, Hamadan, arriving ultimately at the Caspian port of Enzeli en route for Baku. In the course of his remarks he made abundantly clear how formidable are the difficulties of travel in Persia. The usual procedure is to travel in a very primitive type of carriage drawn by four horses, which should be changed every 15 or 16 miles. On arrival at the posting stations more often than not a change of horses is impossible as there are none in waiting. In winter the plight of the horses is pitiable and it is quite possible that the traveller may have to walk as far as he rides and his aid is frequently necessary in order to push the vehicle over the difficult ground. If time is not a consideration and if the bagagge is heavy, it is by far the better plan to travel by caravan, *i.e.*, with a train of pack animals—either mules or camels. Twenty miles per day is a good average by this mode of conveyance, the traveller sees much more of the country he is passing through and he is moreover a perfectly free agent as to when he pauses and when he proceeds. But by either method the cost is considerable being anything between £5 and £8 per day. On some of the routes, notably on the mountainous passes between Sultanabad and Ispahan, robbers and raiders abound. It is well, therefore, at all times to be well armed and to engage extra guards for these journeys. To illustrate the arduous nature of travel in Persia the lecturer related how on one occasion he travelled for fifteen days without the opportunity of either taking off his clothes or of sleeping in a bed, and on the same occasion he travelled for forty-five consecutive days by post horses. The caravanserais on the main routes are often infested with vermin and not always weather-proof.

Of the towns of Teheran, Ispahan and Tabriz the lecturer gave very interesting accounts. Sultanabad, the great centre of carpet manufacture, was described, as also the conditions under which the carpets are produced. Teheran, a thirteenth century town, is the centre of European society and the principal town in Persia. Beside containing the town residence of the Shah and these at of the Court, it includes within its walls the British legation, and also the Imperial Bank of Persia which, in spite of its name, is in reality a British Bank. Ispahan is a town whose previous glory has departed. The ruins which abound on the outskirts of the present town give some indication of its size and importance

under Shah Abbas—a contemporary of our Queen Elizabeth. The river Zendah Rud, which separates the town from Julfa, is spanned by five noteworthy bridges all different in construction—one of which is three hundred and eighty-eight yards long and fourteen yards broad.

Tabriz though not so large as Ispahan is perhaps more beautiful. It is surrounded by gardens which cover an area of many square miles and which produce the raisin-grape and almond for which the town is noted. A fine slide was thrown upon the screen illustrating the Blue Mosque, a wonderful building once encrusted with blue tiles. Tabriz unfortunately suffers greatly from earthquake and quite recently the ancient citadel of the town was entirely destroyed by seismic disturbace.

The other towns described were Kashan, Hamadan, and Kum.

In an exceedingly interesting portion of his lecture, Mr. Flinn was able to give his audience some information as to the course of events in Bushire and Ispahan during the present war. He read to his audience a letter, dated August 16th, 1915, and received from a colleague in Bushire, describing how Bushire had fared at the hands of marauding bands which made nightly incursions on the British populace. The letter was more than usually interesting as it was brought to the notice of the audience on the day the British Foreign Office announced the outrages against the representatives of the Allies in Teheran and elsewhere.

THE SEA NARRATIVES OF JOHN MASEFIELD.

By T. E. RHODES. *November 23rd*, 1915.

With a few exceptions the sea narratives of John Masefield comprise the early work of a writer from whom great things are expected, and justly so, for he has now reached the age which ripens and steadies a man's outlook on life.

From his works we know that his early life was full of the adventures of a sailor in those glorious sailing ships which once crowded our ports and traded to all the corners of the earth. We can imagine his love for literature being developed in the watch below, which we have reason to believe was passed in the company of the Elizabethan poets ; the virility of his literary style may be fairly traced to their influence coupled with the energy of sea-life. We know also from his poem " Biography " that he spent many studious days on shore and formed some literary friendships—one with J. M. Synge—which left a very strong impress on him especially noticeable in his plays and narrative dramas.

The sea narratives were developed in several ways. They comprise

(*a*) Studies of the old buccaneers and pirates told in clear outline and with insight into the characters of the different men ; amongst those the finest is his study of Sir William Morgan and his doings in the West Indies. (*b*) Studies of the very varied folk-lore of the sea out of which Masefield has created many good stories. (*c*) Word pictures of the sea and ships in their more romantic aspects. Of the varying colour of the sea Masefield gives many good pictures and his description of a " White Night " is almost Whistlerian in its subdued and delicate handling ; his description of a ship seen at dawn if translated to canvas would need the brush of a Turner to do it justice.

From the point of view of sea narratives, many of Masefield's shorter poems are well worth reading. Among these we have "The Wanderer"—a story of a ship in its fight against adverse weather and of its final coming into port after long absence; "The River" is the tragedy of the loss of a fine ship just as she makes the Hoogly and for sheer power in the description of terror this is hard to beat; but by far the finest of his sea poems is "Dauber" which is full of the glowing colours of the sea and his description of the ship, nearing Cape Horn, in the fog is full of mystery and sombre grandeur. His novels "Captain Margaret," "Jim Davis," and "Martin Hyde," should be read by all who love the old world of the sea, but it is in his poems that his best work lies.

HOW TO ENJOY A GOOD PICTURE.

(Illustrated by the Lantern).

By BEN H. MULLEN, M.A. *November 30th*, 1915.

Mr. Mullen prefaced his lecture by saying that pictures live and endure by their excellent qualities of form and colour rather than by their subjects, although it is well known that the average person is more interested in the latter than in anything else associated with a picture. The essential qualities of a picture are form or the qualities of line, colour, the distribution of light and shadow, and the ordered and harmonious disposition of form and colour.

Alluding to the numerous and complex laws of composition the lecturer quoting Ruskin, said that there are multitudes of such laws that could not be defined although associated with the deepest powers of the art of painting. "The best part of every good work is always inexplicable; it is good because it is good. But though you cannot explain the pictures, you may always render yourself more and more sensitive to their higher qualities by the discipline which you generally give your character."

Lightly touching upon the origin of the painter's art, the lecturer reminded his audience that form preceded colour and an illustration was shewn of a reindeer drawn by a palæolithic cave-dweller. As to colour it theoretically includes form, the outline of form being the meeting place of different colours in the field of vision. Colour is also associated with light and shade for each shade of each colour is a light in regard to the shades that are lower in the scale and a shade to those that are higher. The lecturer then dealt briefly with the qualities by which all good pictures must be judged. They include composition, harmony, tone values, atmospheric envelopment, design, perspective, and balance. He pointed out that all such elements for criticism were infinitely diversified by the technical skill of the artist, by his personal refinement and æsthetic culture, by his character and education, by his perception and power of interpreting truth and beauty, and by the dexterity of his hand.

The subsequent portion of the lecture was divided under four principal heads, viz.: (1) Portraits, (2) Genre Pictures, (3) Historical and Allegorical pictures, (4) Landscapes and Seascapes. These sections of art were all lucidly treated by the lecturer and were illustrated by photographs of canvasses in the Salford Art Gallery, over which Mr. Mullen presides as Curator. Of course, there are in a colour picture many features and qualities which the camera cannot reproduce but apart from this the lecturer's descriptions and criticisms of the numerous portraits and pictures were most valuable as to methods of criticism which should be adopted by the visitor to any art gallery. He certainly conveyed to his audience in a suggestive and practical manner the method of fulfilling the aspiration embodied in the title of the lecture —"How to enjoy a good picture." On the other hand he did not fail to point out that some have eyes yet see not, and that unless the spiritual and intellectual sides of man are to some degree sensitive to receive and develop the impressions which gain entrance through the physical eye, the man is blind and cannot see. What we find in a picture depends firstly upon what has been put into it, which, in its turn, depends upon the artist and the diversified qualities of his personal and professional character and abilities. The complemental understanding and appreciation of the artist's work is excited only so far as corresponding emotions can be aroused in the man looking at the picture. To teach taste is inevitably to form character.

SIR FRANCIS DRAKE.

(Illustrated by the Lantern).

By NORMAN R. LANCASTER. *December 7th,* 1915.

The lecturer took as his subject Drake's life as far as the close of his voyage of circumnavigation and in his introdutory remarks paid a high tribute to the spirit of the British navy which he spoke of as being essentially "the Drake spirit." Its chief characteristics are an intrepid courage, unfailing resourcefulness in the presence of great difficulty, pious devotion to the country's flag and a consummate skill in all that pertains to seamanship. Drake perhaps is not the greatest of British seamen but he certainly must be placed among the first half-dozen.

After commenting upon the scantiness of our information concerning Drake's early years, the lecturer proceeded to survey the known facts of his life. Drake was born at Tavistock about 1540 and after a brief visit to Spain in his boyhood, he became apprenticed to a North Sea skipper and so laid the foundation of the magnificent seamanship he was destined later to display. Frequently travelling, as he did, to the Low Countries, he was early brought into contact with the inhuman persecution which the Protestants suffered there, at the hands of the Spaniards—a fact which, in no small degree, explains his unceasing and life-long antipathy towards Spain. After his apprenticeship was over, Drake joined his kinsman, William Hawkins, on the latter's third voyage to America. This expedition was presumably for the purpose of trading with the Spaniards but the commercial results were insignificant for by a piece of dire treachery the Spaniards attacked the English ships as they were lying peacefully in harbour. It was only after desperate fighting that Drake and Hawkins managed to escape.

Diplomatic means having failed to secure redress for losses sustained, Drake took the law into his own hands and made two voyages to Mexico the details of which are but little known. It is probable however that they were undertaken in order to reconnoitre the coasts of Central America as a basis for

future action. On his fourth voyage in 1572, Drake sacked Nombre di Dios and, crossing the narrow peninsula near the site of the present canal, he gained his first view of the Pacific which he vowed one day to navigate in an English ship.

After a short period of service in Ireland, Drake, began in the year 1577, his great voyage which resulted in the circumnavigation of the globe. In a most interesting manner Mr. Lancaster gave a detailed account of the events which culminated in the execution of Thomas Doughty for mutiny and much new information concerning this striking episode had been obtained by the lecturer from the recently discovered log-book of the Portugese pilot of the "Golden Hind." Drake sailed via the Straits of Magellan up the western coast of America as far as Vancouver, sacking numerous towns on his way and sinking treasure ships after having first appropriated their cargoes. Unpropitious weather drove him homewards by the East Indies and round the Cape of Good Hope; after having been absent from England nearly three years he sailed into harbour with a rich haul of plunder on board, the value of which has been computed to be no less than eight hundred thousand pounds.

The lecturer in conclusion quoted the well-known saying of Sir Walter Raleigh :—"Whosoever commands the sea, commands the trade; and whosoever commands the trade of the world, commands the riches of the world and consequently the world itself" -and contended that the example of the doughty deeds of Drake had shone like a beacon light through the ages and had led our sailors to fulfil the destiny to which nature seems to have called the British race. Emulation of such deeds has caused to be enshrined in our island story some of the most heroic pages in the history of man.

SCHUBERT AS A SONG-WRITER.

(Illustrated by Selections).

By Rev. F. GORDON MEE. *December 14th*, 1915.

Franz Peter Schubert was born in Vienna three years before the close of the eighteenth century and though he lived only thirty one years he well earned the title, accorded to him by Mr. W. H. Hadow, of "the greatest song-writer that ever lived."

His home was humble and unromantic but one that was religious in tone and where education and music were taken seriously. At the age of five Franz was taught to play the violin and piano and by the time he was eleven had become an Imperial chorister, an appointment which carried with it a good musical education and, in Schubert's case, laid the solid foundation of his life-work. It was at the age of thirteen that he first began seriously to compose and thenceforward overtures, pianoforte pieces, quartettes, vocal and church music came freely from his pen. Two years later he composed his first complete orchestral symphony which was soon followed by his Mass in F. The public success and commendation which attended the production of this mass seems to have given new ardour to Schubert's mind for from this time an extraordinary impulse to compose seems to have possessed him more entirely and more powerfully than in the case of any other composer known to history. In his eighteenth year he completed seven operatic works, two symphonies, two quartettes, two sonatas, two masses and considerably over one hundred songs. Though this quantity is large, the perfection of his workmanship is strongly marked and some of his finest songs date from this period. Examples of his many-sided genius may be seen in his musical interpretations of the solemn stillness of nature in "Sea Calm," of the sweetness and joy of home-life in "The Cradle-song," and of the gay fancies and sharp sorrows of youthful love in "Hedgeroses." Schubert could also find scope for his talents in the narrow limits of a hymn-tune as for example, in his spirited setting to the hymn "Stand up, stand up for Jesus," known as "Fairfrid."

The full ability of the man may be seen in one of the most powerful and difficult of his songs, "The Erl-king." It is interesting to notice how many stages there are in the formation of a great song like this. First there is the underlying idea of the Erl-king—the dread spirit of the dark forests, seductive and attractive, yet rising at last to be the awful symbol of death itself. Then comes the legend story making the idea concrete for simple minds. After this comes the play of the poetic fancy upon it seeking to give to the story an imperishable form of beauty that shall make the legend dramatically effective and easily remembered, and lastly there is the musician who, commencing with the poem, supplies the "atmosphere" of the tale, suggests or recalls details of the sound that would accompany the action, and so arouses the emotions of the audience. In this song we have deep tones suggestive of darkness and dread. The soughing of the wind and the fierce galloping of the horse are unmistakably detected; and many other artistic embellishments corresponding to fluctuations of the theme are easily recognised by the discerning, but even those unable to pick out this parallel between music and theme cannot fail to be moved by the various emotions of this song when they hear it. All must feel that the music gives to the story an impressiveness and a power that no mere reading of the poem could approach. The wonder with which all must regard these songs is increased when it is remembered how thoroughly spontaneous much of Schubert's composing was; the song, "Hark, hark the lark," came like an inspiration on first reading the poem and was written down complete on the back of a menu-card in an open-air restaurant. It is at first sight surprising that Schubert did not gain a wider fame during his lifetime, but his shy and sensitive nature constantly hindered him from "getting on" in a worldly sense. He enjoyed however many noted friendships in the world of letters and music, all of which form a part of his short life-story. Towards the close of his career Schubert became acquainted with Beethoven who said as he perused his music "Surely the Divine Spark is in Schubert." His songs number over five hundred and many of them will always live in the affections of music lovers. So slowly did recognition come and so little did he possess the art of selling his productions that when he died, all his worldly effects were officially valued at fifty shillings!

Like Goethe's "Wanderer," which he so beautifully set to music, Schubert was a stranger and a pilgrim on the earth, but he lived in a world of heavenly melody; and whilst some

might denounce his life as "economically unproductive," others will realize that he has cheered and enriched us beyond all count or computation.

During the evening illustrative selections were rendered in excellent style by Miss Mary Foulds (Soprano), Madame Totterdell (contralto), Mr. Herbert Hargreaves (tenor), Mr. Hartley Thompson (bass), and Miss A. Preston, L.R.A.M., at the piano. The programme was as follows:—

1. Pianoforte Solo ... Impromptu in A ♭. Opus 142.
Miss Preston.
2. Song ... ... "Sea Calm"
Madame Totterdell.
3 Song ... ... "Cradle Song;"
Miss Foulds.
4 Song ... ... "The Wild Rose"
Mr. H. Hargreaves.
5 Quartette ... ... Hymn Tune: "Fairfrid"
6 Song ... ... "The Erl King"
Mr. H. Thompson.
7 Song ... ... "Who is Sylvia"
Miss Foulds.
8 Song ... ... "Hark, Hark, the Lark"
Mr. H. Hargreaves.
9 Song ... ... "Peace"
Madame Totterdell.
10 Song ... ... "The Wanderer"
Mr. H. Thompson.

Presentation
to Mr. Frank Hudson.

During an interval, Mr. Frank Hudson, LL.B., Secretary to the Club for the past nine years, was presented with a purse of gold, containing twenty guineas, and a rose-bowl, suitably inscribed.

Mr. Bellingham, who made the presentation, said that during the forty years the Club had been in existence the position of Secretary had been held by some of its most distinguished members. Such had given to the office traditions which it was no easy matter to maintain, but none had carried out the work with greater efficiency and thoroughness than Mr. Hudson who had filled the office with distinction to the Club and honour to himself.

Mr. Hudson, in reply, spoke of the pleasure the work had brought to him and of the many personal friendships it had been his privilege to make both among officials and members. He appreciated, far more than the actual gifts, those feelings of goodwill and esteem of which they were the mark.

BRITISH COLUMBIA AND THE PACIFIC COAST.

(Illustrated by the Lantern).

By Councillor RICHARD LEIGH, J.P. *Jan.* 18*th*, 1916.

Councillor Leigh remarked that "the West" has been gradually receding since the old El Dorado days, and to-day has come to refer to the land immediately on either side of the Rockies.

The first portion of the lecture was taken up by a review of the early stages on the route to the Far West, and interesting references were made to Quebec, Montreal, and Toronto, as well as to the French element which is still in considerable strength in the Eastern provinces. Niagara, though often considered as an exclusive possession of the United States, is, to the extent of three-quarters, entirely Canadian, and the lecturer made some interesting comparisons between the district round Niagara to-day and the same district as he first knew it forty-two years ago. Passing on to Winnipeg, Mr. Leigh said that less than fifty years ago the present town was a comparatively small settlement in the midst of prairie country, given over almost completely to Indians and the buffalo; to-day it is a town of vast extent and rapid growth; sky-scrapers are everywhere rearing their heads to the sky, and it has become a great emporium which serves the smaller prairie towns for miles around. As for the prairies themselves, the buffalo is almost extinct and the land is used for the more utilitarian purposes of cattle-rearing and farming. On the vast stretch from Winnipeg to Calgarry, there is a general rise in level, with the result that the atmosphere becomes drier; the snow seems to alter its character and become lighter and much more powdery as the mountains are approached.

Near Calgarry is a large Red Indian encampment where the last remnants of a dying race are kept in security and contentment by a beneficent government. The lecturer praised the Canadian policy in dealing with these natives who, in reality, are a dispossessed people. Regular weekly supplies are given to them as long as their conduct is peaceful and orderly. A comparatively small number of mounted

police are in charge who, to the credit of the Indians themselves, have very little difficulty in perfect maintaining control.

In Calgarry itself, where forty years ago there was a miscellaneous collection of wooden huts and Indian tents, there is to-day a vast and growing railway centre. Forty miles on the east side of Banff the traveller notices the first peaks of the Rockies, viz., The Three Sisters.

Mr. Leigh spoke at some length of Banff and its neighbourhood, which, thanks to the enterprise of the Canadian Pacific Railway, has become since the opening of the line in 1887, a health resort of no mean importance. A magnificent hotel has been built amid some of the most charming scenery it is possible to conceive and a warm sulphur swimming bath has been made by conveying the medicinal waters of Sulphur Mountain to the hotel in huge barrel-like pipes. Banff is a centre for almost every kind of sport and in the locality is the National Park of Canada (5,000 square miles), containing huge game preserves and herds of buffalo.

From Banff to Vancouver, the traveller passes over 600 miles of mountain country, crossing in succession after the ridge of the Rockies, the Selkirk Range, the Gold Range, and the Cascade Range. Various pictures were thrown upon the screen showing the engineering difficulties which confronted the promoters of the railway. Mr. Leigh described and illustrated the method of constructing both the wooden trestle bridge and the newer steel trestle bridge which has now superseded the early type. He mentioned, too, the various ways in which the engineers have dealt with the difficulty of the avalanche and snowdrift. Here and there right through the most mountainous regious, the railway passes under snowsheds so designed as to carry the avalanche over the railway, thus leaving the line beneath quite free. These sheds are built of lengths of timber, square in section and about a foot thick. The snowploughs in use are not of the usual type, but consist of huge revolving disc-like fans which cut their way through the vast drifts.

The Rockies are crossed by the Kicking Horse Pass, and at Field, a town by Kicking Horse River, amid beautiful scenery, there are important engine sheds and several tourist hotels. It is from here that a wonderful drive, passing between lines of giant trees, leads to the famous Emerald Lake. The lecturer described the dainty "Glacier Lily" which is found in great abundance in this region; it has stem and leaves very like the tulip, a flower shaped like the single hyacinth and a bright daffodil colour.

On the western slopes of the Selkirks, nature is much more gentle and luxurious, but in crossing the Gold Range by Eagle Pass, we seem to enter a distinctive region, with very little rainfall and, at times, quite arid. The last stage of the railway journey follows the valley of the Fraser River whose course is marked by the constant addition of mountain streams, which carry down into its bed tremendous boulders. Of Vancouver itself, Mr. Leigh was able to give some interesting reminiscences, for, on his first visit, giant cedar trees were growing practically in the town itself. The fjord-like channel between Vancouver and British Columbia is full of charm. Here and there one sees on the shores quaint Indian villages decorated with the totem poles on which family genealogies are recorded, often more imaginative than well-founded. One of the most common sights in these waters is the spectacle of moss-covered trunks of trees which by a tidal freak are tossed eternally to and fro on conflicting currents. Vast areas of the island are as yet uncharted and uninhabited, though it is known to possess a full and rich fauna. Two days journey from Vancouver city brings one to Prince Rupert, a town of queer planked roads were the land is in the hands of speculators and often changes hands at considerably enhanced prices. In closing, Councillor Leigh referred to the whole region as one where the streams are prolific in salmon and described the great " runs " upstream which take place about every four years. Salmon here is so plentiful that dogs can catch them and even bears have been known to lay up a store for winter use.

SUBMARINES, MINES AND TORPEDOES

(Illustrated by the Lantern).

By THOMAS WHYMAN. *January 25th*, 1916.

Mr. Whyman first spoke, in general terms, of the naval situation at present obtaining in the North Sea. The German navy is, so far, in hiding; yet the very fact of its existence renders constant patrol work necessary and the hardy crews of the patrol boats are supported by the knowledge that behind them, at their beck and call, lie the vessels of the Grand Fleet. The dominant factor in the North Sea is the battleship even though it fires no shot and even if it does not emerge from its base. Undersea warfare has, however, become a matter of no mean importance and the weapons by which it is waged are the mine, the mine when aimed and propelled (i.e., the torpedo), and the submarine which carries the torpedo for use as occasion arises.

Dealing first with mines, the lecturer said that during the present war mines had been scattered broadcast over European seas, in spite of the fact that it had been agreed by the Hague Convention that such should not be used more than three miles out from any coast. Mines are of two kinds, anchored mines and floating mines; and the lecturer by the aid of diagrams demonstrated how mines were anchored so as to remain stationary either at a prearranged distance from the sea-bottom or actually on the surface. To counteract the danger arising from their presence, vessels of the Steam Trawler Reserve patrol mine-infested waters locating the mines, sweeping them up and bringing them to the surface by the aid of huge steel hawsers used in the same manner as trawl nets. When thus captured, the mines are either perforated by rifle fire and thus rendered non-buoyant or they are carefully transferred to other areas in the hope that the enemy may be "hoist with his own petard." Other mines are of the freely floating type; mines of this kind are so arranged that, after a certain period, unless previously detonated by contact, they will sink automatically. Such mines are most often used in estuaries or straits where currents run strong; they are set free in large quantities to float

down the fairway in the hope that they may strike any craft which may be in the vicinity. To deal with this menace wherever it is suspected, countermines are exploded beneath the water and the concussion set up, fires, sympathetically, any floating mines which are near.

Speaking of the torpedo, the lecturer pointed out that in its most primitive state it consisted of an explosive fired at the end of a long pole which projected from the bow of the boat. When the boat had been manœuvred so that the explosive was quite close to the hull of an enemy craft, it was fired by means of a trigger, pulled by a rope or wire connection. The torpedo became the formidable weapon it is to-day by virtue of the addition of engines which render it self-propelling. The modern torpedo contains a chamber of compressed air to operate its engines and by their means it can travel at the rate of forty miles per hour, under its own power. The lecturer carefully explained the construction of the war-head of the torpedo and the many intricate devices which render it fool-proof; he also made clear by the aid of diagrams the use of the torpedo-director for accurately firing a torpedo from a moving vessel at a moving target. Since a single torpedo costs about nine hundred pounds it is desirable that, in case the mark is missed, the torpedo should not be liable to be picked up by the enemy and used against us. To obviate this a cunningly devised stopping gear has been arranged so that, after running a set distance, the torpedo shall automatically sink.

Mr. Whyman told the story of the early submarine, "David," which was tried during the American War in 1864. The "David" was driven by manual power and before any measure of success was attained, it brought many of its own successive crews to their doom. By sectional diagrams, the internal arrangements of the modern submarine were explained. When running at surface level, submarines are propelled by oil engines, but when submerged they are driven by electric power supplied by accumulators. The periscope was described in detail, and an excellent series of slides illustrated the submarine in various stages of the process of submersion. The lecturer then spoke of the very rapid development which had taken place in submarine construction and compared the H.1., an early British submarine, with the later E.20. The H.1. was a vessel of 120 tons, developing 120 H.P., and capable of a speed of $7\frac{1}{2}$ knots; whereas the E.20. is a vessel of 800 tons, developing 1,600 H.P. and capable of 20 knots. Moreover compared with the

H.1., the E.20. can truly be styled luxurious in its fittings and appointments.' On the question of offence and defence against submarines and torpedoes, Mr. Whyman discussed and illustrated the harbour boom, ship's nets, vessels of shallow draught—the "monitor" type, the development of tactics calculated to baffle the submarine, and the very active warfare waged against submarines by aircraft.

In conclusion, the lecturer spoke at some length of the failure of the submarine blockade of our shores which the Germans declared on February 18th, 1915. By diagrams and statistics, he made his audience realise the almost negligible damage done to the vast volume of our merchantile traffic and the rapid waning of the enemy's activities after August, 1915—and this, in spite of the feverish activity of the Germans in submarine construction during the early summer, when flushed by their first successes.

MUNICIPALITY AND MEDICINE.

By Councillor Dr. J. W. CLEGG. *February 1st*, 1916.

Dr. Clegg gave the monastic system credit for the introduction of hospitals for isolation, and stated that the great fire in London after the Plague led to the widening of streets and the giving of greater space in houses. In the 18th Century they saw the humanising of British politics and the improvement of conditions in prisons through the influence of John Howard, and the great efforts of Chadwick in sanitary science. The first medical officer of health was not appointed until 1847, and it was not until 1871 the attempt was made to consolidate most of the laws relating to health and sanitation when the present Local Government Board was formed. If this problem had been tackled from the beginning, as it ought to have been, they would have had a ministry of public health, but being an industrial nation, we set up a Board of Trade, and had not time to set up a real Board of Health. They had that condition remaining to-day. Part of the laws relating to the health of the people were controlled by the Local Government Board, another part by the Board of Education, and yet another part by the Home Office. The reports presented by medical officers led to the passing of the Public Health Act of 1875, which was practically the foundation of all our health measures. The result of this had been the very slow growth in teaching preventive medicine and a great many evils had been allowed to go on unchecked, and the consequence had become so serious that at the end of the last century—especially after the Boer War—the nation become greatly alarmed. It was then found that our lunacy was increasing, our workhouses were too full, our crippled people were too numerous, and our unfit were out of all proportion to what they ought to be. That led up to the formation of a commission to endeavour to rectify matters. He would not like to divorce public health work from the ordinary work carried on by the medical profession, as any attempt to do so would be disastrous. They were trying to stamp out consumption in this country, and the ideas of dealing with it were still undergoing great changes. They knew very definitely that it was not a disease passed on from father to child. They knew there was a predisposition for the organism to lodge in such children.

Those who had tried to kill the germ after it had reached the soil, as it were, had been disappointed, and there was nothing to hope in that direction. Clearly it was evident that it was their duty to stamp out the disease if they were to deal properly with the soil, and in doing that they opened up one of the biggest questions connected with public health administration. They knew the organisms found lurking places in ill-ventilated, badly-drained and small dwelling-houses, and that they attacked people who lived in such a way that they lessen their resistance to disease. Sanatoria had been erected to send people to, but it was curious that Edinburgh, which evolved the finest institution, was beginning to doubt the wisdom of it all, and to think that what ought to have been done was the tackling of the surroundings of the people before they were attacked by the disease. That meant that public opinion must be roused in such a way that through the ballot box it would demand better housing and home conditions. We were spending large sums of money with little benefit, but whatever national and local authorities might try to do for a person, it ultimately resolved itself into what a person could do for himself. Unless a person would endeavour to help himself, the efforts of the authorities would not meet with the success they ought to do. In 1907 Parliament decided that they should make a beginning with the child—there should be medical inspection at school which would carry with it the feeding of children. It meant the seeking out of troubles that, in an early stage, could be remedied, and of which a parent did not realise the full significance. The school doctor had to anticipate defects. In this matter they came across the question : Had the municipality any right to try to help a child against its parents' wishes? He pointed out that 'when the franchise was extended in the late 60's, it was bound to follow that they must have a scheme of compulsory education if they were not going to have people voting who were not fit, and just as they compelled attendance at the elementary school they were bound to see that that attendance was under proper conditions. If a parent had no choice in sending his children to school, the authorities should see that the conditions did not interfere with the child's natural growth. If the authorities had a properly ventilated and thoroughly equipped school for the child to go to, it ought to go a step further and see that no child was in attendance which was not in a fit and proper condition to profit by the instruction given. He advocated medical examination in secondary schools.

Dr. Clegg added that just as medical inspection was bound to follow compulsory education, so treatment was bound to follow medical inspection. Contrary to the fears expressed, in actual practice it had not turned out very expensive, or clashed with the interests of the interested parties. The children dealt with at the places of treatment unfortunately were from the class which would be allowed to grow up and become useless members of the community, ultimately becoming a charge on the town in many directions. Therefore, in his opinion, it was far cheaper to spend pennies in preventive work rather than pounds in redemptive work. He was one of those who believed—and his opinions were hardening in this direction—that most of our social problems would have to be solved during school life, and that it was incumbent upon us to see that not only would they have the best teachers they could get, but also the best health conditions. Then they would not be confronted, as they were to-day, with the great amount of indifference and ignorance on the part of the parents. They would have to make the children, who would be the future parents, understand and realise in many respects the importance of what was being done for them. When they approached education in that spirit, and carried it out to its fullest extent, they might, he thought, reasonably look forward to a lessening of many of their present social problems. Upon the teachers fell a work which was not always sufficiently appreciated; it was not merely imparting education, for this was the least part of their work. The children were the future men and women, and their characters were moulded in the most plastic period of their lives, when certain truths could be driven home. There would never be the same opportunity again for doing it. All children were not alike, and consequently they had special schools for backward children. Authorities who looked ahead now said that they ought not to compel children to do something they were physically unfit to do, and thus increase the cost to the community in later years. Children, he said, drifted into tuberculosis and other defects through this, who, had they been taken from the ordinary school at the beginning and placed under proper conditions in open-air schools, would have improved, and so saved the town a lot of money, besides being preserved for the nation. The idea of open-air education was not to set up elaborate establishments in which to freeze a child to death, but simply meant they were to take a small percentage of children who could not follow the school curriculum and give them a judicious mixture of rest and work in inexpensive open-air premises. Such schools, it was

thought, were expensive, but the Central Authority would repay a large proportion of the money spent on such schools. Therefore, there was no excuse for not doing it.

If there was a time for doing it, it was surely necessary now with a continually declining birth-rate and a heavy infant death-rate. It did not need much to see that they were not going to burn the candle at both ends long. The nation was getting alarmed, and in recent years attempts had been made to check this state of things. Into the question of the declining birth-rare they could not enter, but the problem of the infant death-rate was one which concerned Burnley particularly. He found from the health report of 1874 they were discussing the same problem The problem confronting them was, could they do anything to prevent this wastage of child life? It varied very much in different parts of the country, and it was remarkable that towns so closely together as Nelson and Burnley, and so alike in their industries and conditions, should vary as much as they did in the death-rate. This was not time time to analyse the figures, but they must realise the fact that the rate, particularly in Burnley and in Lancashire, was far too high. They seemed to have got to the place where they ought to have started centuries ago—with the unborn child. It was sad to think that a large number of children were, so to speak, dead before they were born; they never had a chance of living after birth. What it was proposed they should do was to set up certain centres where expectant mothers would be invited—not compelled—to go, where they would be welcomed and would receive advice according to their individual cases. As in many cases the feeding of mothers had a great deal to do with the offspring, certain authorities were undertaking to see that during the latter months, at least, the mother should be properly fed. If they could get the women to attend these centres it would arouse in them a greater interest and show them they were thought more of than mere units of the population. That involved setting up Maternity Centres. Many women lost their lives in childbirth, and an attempt would be made to minimise this as far as possible by placing at the disposal of every mother, no matter what her social position was, the best nursing and surgical skill the town possessed. It was hoped by those things, first of all, to interest the mother with sensible advice as to obtaining the best prospects of having healthy children, then to assist them in their hour of need, and afterwards to get them to continue regularly visiting centres in order that the growth and development of the child might be followed.

The mortality was largely in the first year, and in towns like Burnley epidemic diarrhœa and chest troubles were largely responsible. In many of the houses it was impossible, however intelligent and willing the mother might be, to nurse a child with those ailments with any prospect of success. Authorities were now providing a recognised children's hospital treatment of the children whose homes were not satisfactory.

Dr. Clegg mentioned that there was also a big gap between the age of thirteen and sixteen, and asked what was to become of the two million young people going to waste. There was nothing arranged for dealing with them. But, on the other hand, there was nothing to prevent any local authority keeping in touch with them. With our lessening birth-rate and heavy infantile mortality, and the unfortunate wastage which went on during adolescence, we were going to be faced with some very serious problems.

YORKSHIRE, ITS FOLK-LORE, CUSTOMS AND BROAD ACRES.

(Illustrated by the Lantern).

By HENRY CROWTHER, F.R.M.S. *Feb. 8th*, 1916.

The Pennine Range has exercised an enormous influence upon both Yorkshire and Lancashire. To a great extent it has determined the types of character to be met with in those counties and to some extent the industries carried on. Turning first to the botany of the Pennines the lecturer explained in what various ways the different moorland grasses and mosses are adapted to their environment, and he spoke of how the vast expanses of moss to be found on the moors ensures a never-failing supply of water for our streams even in periods of long drought. After specific references to some of the most beautiful Pennine hill-plants, the lecturer proceeded to illustrate, by means of artistically coloured slides, the most typical features of Pennine moorland scenery—weathered crags, heathery valleys, and extensive stretches of undulating moorland. A tribute was paid to the privilege, which both Lancashire and Yorkshire enjoyed, of practically free access to a vast moorland area.

Turning specially to Yorkshire, the lecturer spoke of the varieties of geological phenomena and the wide range of rocks, from the oldest formations to the newest, which the county contains within its borders. The influence of the glacial period upon the general contours of Yorkshire was discussed and many illustrations given of rocks which had been transported by the agency of ice from distant regions into areas where the surrounding rocks were geologically different. Fine photographs were shewn of the "folded" limestone near Bolton Abbey, of Brimham Rocks, and of the calcareous grits surmounted by fantastically weathered boulder clay in the Filey coast district; special mention was made of the freakish tricks of nature to be seen in the Malham and Gordale districts and in Clapham Cave.

The lecturer then proceeded to review picturesque Yorkshire, dealing first with the dales and then with the coast. Particularly delightful were the slides illustrating such quaint spots as Redcar, Staithes, Runswick Bay, Sandsend, and Robin Hood's Bay. In many places on the north Yorkshire coast the sea is gradually gaining upon the land at the rate of two yards per year, though in the region of the Spurn new land is being deposited.

Yorkshire is a county of an infinite variety of interests. Apart from the moorlands and scenes of quiet pastoral beauty, Yorkshire contains some of the finest architectural monuments in the country. Beverley Market Cross—the Bars of York and other ancient towns—ruined abbeys like Kirkstall, Fountains, Jervaulx, Whitby, and Bolton—mediæval castles such as those at Skipton and Richmond, were all illustrated by the lantern and suitably commented upon. The county has proved itself to be rich, too, in archeological remains. Flint implements, celts, and objects belonging to the Bronze Age have been frequently unearthed.

In such a large area as Yorkshire, in which so many different types of country are to be found and in which different influences have operated in different regions, one must not expect to find any one type, constant and well-defined. On the whole, whoever, it can be said that Yorkshiremen are inclined naturally to be mathematical and musical; but above everything they are practical in their outlook upon life. In the country districts they rather tend to be "wise after the event" and it has been said, with some truth, that they "have more humour than wit." They are hospitable but most strongly resent anything savouring of patronage.

THE SAHARA AND ITS FAUNA.

(Illustrated by the Lantern).

By GRAHAM RENSHAW, MD., F.R.S.E. Feb. 15, 1916.

Mr. Renshaw opened his lecture by pointing out the existence of close regional limitations which obtain in the animal world. Though the northern and southern deserts of Africa are very similar in climate and vegetation, the fauna of the Sahara is, apart from one or two instances, quite distinct from that of the southern deserts. The lecturer took as the basis of his remarks some half-dozen sketches of the grouping of desert animals, made by Sir William Harris, one of the early African explorers, from the seat of his waggon. The sketches were reproduced as lantern slides and skilfully used for interesting deductive studies of the ways and habits of desert fauna.

In one picture, obviously a morning scene, the close bunching of the animals (antelopes, wild asses, &c.) shews signs of breaking up—the antelopes "stringing out" while the wild asses assume crescent formation. Among the ostriches in the foreground are to be seen the gazelle and wild ass; this grouping is accounted for by the fact that the extremely acute hearing of the gazelle helps out the deficiencies in this respect, of the ostrich. By the aid of another picture the lecturer skilfully deduced the story of a wilderness tragedy. The sketch shewed an oasis in the desert with a lion in the foreground and the fragmentary skeleton of an antelope or gazelle in the middle distance. The obvious deduction was that the lion was just leaving the carcase of a desert animal it had overpowered and eaten. This was not so, for the lion had certainly not recently fed upon the carcase. The lion invariably gnaws the hind quarters of its prey, then the body and lastly the head. After the body has thus been mauled there is next a gradual gathering of vultures which circle round and round and ever closer and closer to the torn carcase until they are sure life is extinct. They alight upon the body and take their toll. Lastly the hyænas are attracted by the presence of vultures who thus serve as a means of indicating the presence of food. Thus the tragedy is completed and the mere bones are left to bleach in the desert.

Dr. Renshaw dealt in a very interesting manner with the ostrich and giraffe. The ostrich is essentially a bird of the desert. Its prominent eyes and long neck ensure safety from attack. When the ostrich is young the legs and neck are not unduly elongated, and it therefore seems probable that the ostrich is descended from a bird not specially adapted to the desert and that the adaptation arose gradually during the history of the race to meet new circumstances of environment. Like the domestic fowl it has lost the power of flight, its wings being used only to steady itself in running, for which activity its long stout legs seem to have been specially developed. The ostrich has a very small foot for, during its racial history, it has lost two of its original digitals, with great gain, however, to its running powers. The remaining digits are large and well padded. From the skeleton of the ostrich it is seen that the breast-bone is not keeled as in birds adapted for flight. The keel seems to have disappeared because the muscles operating the wings gradually ceased to be fully functioned; hence the keel which originally served as a point of attachment for the large muscles of the wings gradually became less and less pronounced and finally non-existent.

The giraffe is an animal whose entire organization is completely adapted to its environment. Its long mobile thickened upper lip and the ability to close completely the nostril, serve as a protection against the thorns on the acacia tree, on the leaves of which it feeds. The neck would seem to have become long in the course of its racial development for there are only seven vertebral bones in the neck, and the neck of the young giraffe is quite short. The high withers of the giraffe allow of suitable attachment for the supporting ligaments of the long neck and also serve to secure speed and sure-footedness. Similar full treatment was accorded to the oryx, the bubal, the gazelle, and interesting reference was made to the jerboa, the desert fox, black stork, and the wild dog.

WANDERINGS IN VENEZUELA.

(Illustrated by the Lantern).

By F. G. PERCIVAL, B.Sc., F.G.S. *Feb. 22nd*, 1916.

The lecturer visited Venezuela in the spring of 1910 as one of a scientific party, sent out from England for the purpose of investigating the oil and petroleum supplies. Their mission often took them away from the comparatively civilised coast regions into the lesser known parts of Venezuela, for the country contains great contrasts and one day's journey may separate a region almost up-to-date in its modernity from one which reproduces all the crudities and inconveniences of our middle ages. The party travelled via the Azores, Barbadoes, and Trindad, in which latter island some research was carried out in the southern part during an enforced quarantine of a month. In order to finish the journey a boat had to be chartered from Trinidad to Venezuela.

The visitor makes his first acquainance with the country at La Guaira, built on a steep hillside by the sea ; it is the port for Caracas with which it is connected by a railway. The coast range that intervenes between La Guaira and Caracas makes the journey extremely interesting, but the engineering difficulties encountered reduce the efficiency of the line very considerably for the loads must needs be small and the cost of transit high. This is characteristic of the whole district, the rocks are steep, twisted and contorted, and the gorges constitute formidable obstacles to both rail and road. The route from Caracas via Valencia to Puerto Cabello is similarly difficult – at one point it is so steep as to necessitate a rack-rail. La Guaira has a reputation for its heat, yet Macuto, a few miles along the coast, has cooling breezes which render it the Brighton of Venezuela ; this is probably to be explained by the break in the hills behind Macuto. Caracas, the capital of the country, has, owing to its altitude, a much more tolerable climate and may be likened, in its life and its appearance, to a southern European city.

Venezuela is a republic, governed by a congress of representatives from the United States of Venezuela. Representatives are of two orders, deputies and senators. Each state has its president and each town its magistrate. But the country is young and it is not until one gets away from the capital that one realizes how undeveloped the country really is. The smaller towns and villages consist of single-storeyed houses, the walls are mud plastered and the roofs thatched with palm leaves. There is a very elementary education given in the villages, but the Government is awake to the need for a more systematized scheme for, apart from Caracas which has a university, the facilities are very meagre. As is usual in young countries there is much corruption in official circles and little security for life and property ; until quite recently the carrying of revolvers was quite the common thing. In spite of this, the people, whether of pure Spanish or of a mixed descent, have a natural courtesy and hospitality that is charming, and place their best at the disposal of the traveller. As they live in a primitive manner the traveller must be prepared at times to accept a rather rough monotonous diet. In many places wheaten bread is unknown and in its place, very insipid cakes of coarsely ground maize are used. Milk is often difficult to obtain, though the coffee is excellent. Where goat farming is carried on, as in the district round Coro, delicious goat milk and cheese can be had, while on the inland sugar farms the diet invariably consists of fowls with zams, boiled bananas, thin sheets of dry cassava cake, with crude brown candied sugar as a sweet. For a people whose tastes are so simple life is easy and comfortable ; if they feel inclined to work they will and for fairly low wages ; but very few types of exertion are thought worth while, so long as they can obtain the simple necessaries of life.

Venezuela is waiting for foreign capital to come and organize things and to bring the mixed blessings of modern industrialism in exchange for their copper and petroleum. British companies are, to some extent, already dealing with cattle and petroleum, but during the next few years European capital will be needed in Europe. It is to Venezuela's interest to encourage her people to develop the natural resources for themselves without awaiting the initiative of foreign capitalists.

CONCERNING LIKES AND DISLIKES.

By the Rev. T. WALTON MEREDITH. *Feb. 29th*, 1916

Humanity is composed of a strange mixture and contains some astounding surprises. By reason of the vast variety of differences which exist within it—differences of race, nationality, historical development, differences of politics and of social customs. The physical differences which separate individuals are considerable, but the mental differences are more important and more varied. The different ways of looking at things exemplified by different individuals are products of mental constitution and education. Beyond physical and mental differences there are spiritual differences; many and varied are our conceptions of God, some people seem gifted by a kind of spiritual intuition and are easily moved by devotional sentiment, while others of a more practical turn tend to approach spiritual problems through the syllogism. In practical life all these varieties of difference are displayed through our likes and dislikes.

Likes and dislikes often sharply distinguish even brothers right from childhood, for apart from common traits, due to parental influence, there are other likes and dislikes which most decisively differentiate members of the same family and which are apparently inexplicable. It is precisely through these personal predilections that we assert our real selves for taste is the most individual thing about us. Pictorial art, physical form, music, all provide material upon which to exercise taste and thereby to exemplify the wide differences which even educated people display in their choice of what is best. Taste, too, appears fickle, for the good taste of one age is often the mockery of the next. Our likes and dislikes bring us pleasure and fine taste in music or in art makes for personal enjoyment. Likes and dislikes determine also our recreations and our worship, decide our companionships and influence our judgments upon our fellows—"condoning things we are inclined to, by damning those we have no mind to."

The general characteristics of life during any period of history are determined by the particular objects of the prevalent likes and dislikes of that period and from this point of

view it may be said that the fashion plates, music, pictures, poems, novels, styles of furniture, of any particular age, constitute the true mental history of that age. The grandiloquent oratory of our grandfathers' days has given place under changing standards of taste, to a quieter, more direct, and simpler style of speech. Similarly in higher matters; no age sees Truth completely, one age emphasises one aspect of Truth and delights in its contemplation, and another, another aspect.

In conclusion, the lecturer shewed what an important place in education the cultivation of taste should take. The mere imparting of information was of comparatively small moment when measured against the importance of forming a taste for the best that has been thought and said and done in the world. If such a taste can be developed it provides a sure defence against the insidious dangers of low and vulgar pleasures.

THE BALKANS AND ITS PEOPLES.

By L. B. de BEAUMONT, D.Sc., F.L.S. March 7th, 1916.

It must be recognised that there is much in the Balkan problem to puzzle and mislead outsiders. The Balkan peoples live in their past to an extent which may well seem inexplicable to us. Imagine a land strewn with the wreckage of empires, inhabited by peoples who, for many centuries, have been in turn conquerors and conquered, masters and slaves. Then the Turk came, and darkness fell upon the land, and nations were blotted out of existence, so that the West forgot even their names. When at last the awakening came, those unhappy races could only think again in terms of what they had been ; they did not understand anything else—as has been often and well said, their only desire was to go on from the point at which they had left off. The world had changed much during their long sleep, but to them the only real things were the questions left unsolved for more than 400 years. And to-day they still deplore the fact that those problems, so intensely vital to them, remain vague and obscure and apparently of minor importance to us Westerns.

Perhaps the most difficult problem of all lies in this singular fact that each of the present Balkan States represents only a part of the population which bears its name and shares its political aspirations. The Serbs cannot take a portion of territory without the Albanians or the Bulgarians at once feeling themselves robbed of some villages which in their eyes are Albanian or Bulgarian villages. The Bulgarians cannot occupy any part of Macedonia without the Serbs or the Greeks asserting that Serbian or Greek people are being unfairly compelled to become Bulgarians. Thus, each Balkan State regards itself as being but the nucleus of a nation whose legitimate citizens are to be found outside of its political frontiers. And this is true enough, for when those States were formed, with so much difficulty and so much bloodshed, out of the shattered fragments of the Turkish Empire, all sorts of considerations quite independent of sound ethnography preoccupied the Western Powers and influenced their decisions. Not without some reason do the Balkan peoples complain that Europe did not understand them. Uncertain frontiers were created, and these

have left painfully acute the problem of uncertain expansion. Diplomatists, in despair, may plead that the problem is insoluble, but it has perhaps been made even more so by hasty, artificial, and often selfish solutions intended to satisfy Western requirements rather than the legitimate aspirations of peoples earnestly feeling about in search of their true affinities. In every school, whether in Greece, Macedonia, Bulgaria, or Serbia, you will see on the walls maps displayed on which are shown the present frontier in one colour, and the frontier that ought to be the ideal frontier in another colour. Those maps eloquently set forth the great Balkan difficulty, and they also enable us to understand what a splendid opportunity is thus afforded for the political intrigues which have created the position in the Balkans, with which to-day the Allied Powers have to deal.

Referring to the Albanians, the lecturer admitted their claim to be probably the oldest inhabitants of the Balkan Peninsula. The Albanian always is and remains an Albanian. Unlike the Serb or the Bulgar, who, having become a Moslem, often exhibits a fanaticism which even a Turk might envy, the Albanian never allows his nominal allegiance to Islam, if he be a Moslem, to interfere with the fact that he is an Albanian. In fact, as has been often remarked, they seem to lack the religious sense. Christianity and Islam are political labels which have left practically untouched the old pagan beliefs and superstitions of that most ancient race. "We Albanians," once said one of their chiefs to a distinguished English traveller, "we must have freedom; we will profess any form of religion which leaves us free to carry a gun; therefore the majority of us are Moslems." But they are very lax Moslems, and their religious ideas are curiously mixed. Red eggs at Easter are, in some places, given amicably by Moslems to each other; if verses from the Koran fail to cure an ailment, not having yet heard of Christian Science, they try a Christian relic or medal. Yet it must be acknowledged that the Albanians are a very intelligent people, and can adapt themselves to modern ways of life. They are excellent men of business. In Cettinje, the capital of Montenegro, more than half the trade is in their hands; along the coast of Dalmatia, and on the shores of the Adriatic, even in Italy, Albanians are found successfully engaged in commercial pursuits. All that seems to be required for those interesting people is education and good government in the place of the selfish political intrigues which, so far, have been their chief acquaintance with Western civilisation.

The Bulgar is hated to-day in the Balkans even more than the Turk. The other Slav peoples call him the " Judas of the Slav race," because in the course of history the Bulgar has never hesitated to put his own interests before those of the Slav family. The Bulgars, although partly Slavonic in blood, are very unlike the Slavs, and especially their immediate neighbours the Serbs, both in physical appearance and in character. The Serb is essentially sentimental, even to dreaminess ; a lover of art and poetry. He is excitable and easily swayed by his feelings and his ideals ; his sympathy with the other Slavs is intense and generous even to to a fault. The Bulgar is entirely different. He is essentially positive and practical ; somewhat cold and reserved, shrewd and suspicious ; a man of few words. His neighbours may go mad about Slavism. To him all that matters is what will pay. He never trusts you fully, and it is not perhaps safe to treat him otherwise. It must, on the other hand, be said that if the Bulgar is not particularly pleasant and sympathetic, if his Hunnish descent undoubtedly qualifies him for Teutonic associations and alliances, still he is no doubt a valuable ally up to a certain point. He is the best worker in the Balkans ; you can give him his job and then leave him to do it without supervision. He will go on working steadily and well without taking advantage of the freedom given to him. This certainly cannot be said of all workmen in the Balkan Peninsula.

In Roumania politics are hardly controlled by public opinion. The power lies with small groups of politicians, and ultimately with the Court, about which Teutonic influences are considerable. Large profits are being made by politicians and commercial men out of the war, so that although the common people are openly favourable to the Allies of the Entente Cordiale, sentimental grounds are not likely to be the basis of Roumania's action at present. Allied successes in the West, or in the East, or in the Balkans will probably alone decide favourably the attitude of Rumania.

Although the memories of ancient imperial days may create false ideals and dangerous ambitions in the hearts of the Balkan peoples, yet it must be recognised that they have a future not unworthy even of their memories. The rapidity with which they have progressed, and, at least in part, assimilated the civilisation of Europe since their liberation from the Turkish yoke, shows what can be expected from them under favourable conditions, when being no longer pawns

in the game of some great Powers, they will be able to fulfil their destiny as free nations. The best and most enlightened men among those Balkan peoples are fully conscious of the fact that their future is bound up with the result of the mighty struggle of the Allied nations against the present associates of the Turk, the old enemy of their race. In fighting for the final regeneration of those Balkan lands, England, they feel, is adding another page to the noble record of her efforts on behalf of human freedom.

EDUCATION AND NATIONAL EFFICIENCY.

By THOMAS FOSTER. *March 14th*, 1916.

Mr. Foster described "education" as *training* and "efficiency" as *fitness*. Training might produce desirable or undesirable types, useful members of society or useless ones, and the result of the training depended upon the motive or ideal by which the training is actuated. What we mean by national efficiency depended upon our ideal of what a nation should be. The lecturer therefore asked whether we, as a nation, had a definite and desirable ideal towards which to train.

The lecturer then went on to speak of the clearly conceived German ideal of man being considered as existing solely for the state and said that Germany with this ideal of a state-controlled life had a very thorough system of which led her citizens to a very high degree of one type of efficiency. This country however seemed to the lecturer to have divided and conflicting ideals—some similar to those of Germany, e.g., a governing state and a governing caste —others, intensely individualistic, based upon the economics of the Manchester school. These latter were largely responsible for the idea that life is an opportunity for the accumulation of material riches with resulting power over the lives and services of others. At the same time, we were conscious of our professed religious and moral standards which commend personal service and sacrifice as the basis of duty to our neighbours. All these ideals tending in different directions were confusing, for to travel in contrary directions at one and the same time is impossible.

Mr. Foster then proceeded to lay down certain fundamental axioms. Membership of a community has its obligations and that nation is the most efficient which has the largest number of its citizens able and willing to discharge those obligations. On the other hand, a citizen has his rights;

chief among these is his claim upon the community to be trained and fitted for his place in society and an ideal educational system would be one which fits the citizen for his position and the due discharge of his obligations.

To what ends, then, should the citizen be trained ? Firstly, to maintain himself and to help to maintain those dependant on society, viz., the young, the old, and the infirm ; to contribute his share to the national wealth (i.e., well-being) by engaging in a useful work ; to realise that to live without working usefully is the greatest disgrace and that no work that is necessary is menial. The obligation upon each to contribute his best to the welfare of the state places a corresponding obligation upon society to provide an opportunity for the highest possible development of every child. On economic grounds alone this is desirable, for the economic value of one great industrial genius is sufficient to cover the expense of the education of a whole town. Secondly, the citizen should be trained to take an intelligent part in the government of his country. In an ideal democracy all would be actively interested in public affairs. Thirdly, a citizen should be so trained as to be able to use his leisure wisely. During the time in which the citizen is not directly discharging his debt to society there should be due time for recreation, both physical and intellectual and for the care of the spiritual side of his nature. Fourthly, there is the obligation (which implies, of course, ability) on the citizen to defend his country. Until such time as other states arrive at approximately the same stage of moral development, the danger of interference from outside is possible ; hence some system of national service should be inaugurated.

Speaking of the steps now available to help our country to achieve its best, the lecturer instanced the provision in our primary schools of the happiest possible environment —so good that even the richest cannot procure better. In arranging our curricula the first objects should be sound character and healthy bodies, together with the development of the child's natural aptitude to acquire knowledge. Too much mental discipline should not be attempted, for that often results in the stifling of personality. All, if possible, should go through a full secondary school course, or, at least, attend day continuation schools for a few hours weekly up to the age of eighteen. The state cannot afford either on economic or on moral grounds to waste the found-

ational training given in our primary schools. Furthermore, all capable students should reach the technical college or university; while as a preparation for industry and commerce, in spite of what "practical" men said, the best possible scientific training was necessary.

Finally, before it was ever possible to realise in the state a true efficiency, it was necessary to cast away the material standards of success in life; we should then perhaps have fewer men rich in material possessions but we should have a country rich in the Ruskinian sense, for our chief national concern would be the production of souls of good quality. Surely the consummation of wealth for a state lay in the possession of as many full-breathed, bright-eyed and happy-hearted human creatures as possible. Such a consummation was an ideal of national efficiency worth striving for, and the way that led to it was the truest education.

RECITAL : Nicholas Nickleby.

By the Rev. A. R. RUNNELS-MOSS, M.A.

March 21*st*, 1916.

On this date the Rev. A. R. Runnels-Moss, M.A., gave a greatly appreciated dramatic recital of the complete theme of Dickens' " Nicholas Nickleby."

A TRIP TO THE JÖTUNHEIM.

(Illustrated by the Lantern).

By SAMUEL POPE, Esq.,
Recorder of Burnley.

March 28th, 1916.

The purport of the lecture was to indicate by a series of views the character of the scenery to be enjoyed on the high plateau of the Jötunheim and the suitability of the district for a walking holiday. For a first visit, a steamer journey direct to the selected point of entry to the mountain country was not recommended, and the lecturer in fact began the story of his travels at Stavanger. From this point the journey was made up the beautiful Bukken Fjord to Sand, a charming resting place at which to recruit from what has gone before and for what will come after in the way of travel.

From Sand the well-known overland route to Odde, or the Sör Fjord, was followed. The scenery on this route is of the most varied and attractive kind and includes the Suldals Vand with its precipitous rock walls and the gorge scenery of the Bratlands valley. The road through the Brattansdal is the pride of Norwegian engineers, and the scenery has justified the expenditure. Pleasant upland country is reached above the gorge and the road, after passing by the side of several lakes, is carried to the snowline by a notable zig-zag ascent at Breifond and an even more striking descent to the Laatefos waterfalls and Odde. This part of the route was adequately depicted by a series of views.

From Odde down the Sör Fjord to Eide and thence to Ulvik was the next stage. Ulvik is deserving of notice as a charming resting place. From Ulvik a long drive past Gravensvand to Vossvangen and thence to Stalheim, the Naerodal and Gudvangen, brings the traveller once more to sea water. The traveller should time his arrival at Stalheim for the afternoon as the lighting of the famous Naerodal is then the most favourable for viewing it. At Gudvangen

the steamer is taken down the Naerofjord into the Sogne Fjord and so to Laerdalsoren. An interesting detour can be made by crossing the Sogne Fjord to Balholm and so into the Fjaerland Fjord to view the great glaciers descending from the Jostedal snowfield, the largest glacier area in Europe, but the visitor to the Jötunheim will spend the night at Laerdal (it seems impossible to escape this penance) and take steamer up the Lyster Fjord to Skjolden. Skjolden is is the gateway to the Jotunheim and lies at the most remote point of the Sogne Fjord, 112 miles from the sea.

From Skjolden a mule track leads in the course of a steady pull of four hours to Turtegro, the headquarters of the climbing fraternity. The mountain plateau here is just under 3,000 feet above sea level, and innumerable walks and mountain excursions await the visitor. Views were shown of the various peaks and glaciers of this district, also some panoramic views taken from the summit of one of the mountains. Leaving Turtegro, a tour of unusual interest was illustrated embracing nearly every point of note in that part of the Jotunheim. The route described took the pedestrian across the tableland forming the summit of the Sognefjeld (or Dolefjeld) affording exceptional views of the great glaciers descending from the Fanaroak mountain almost to the waters of the Praestesteinvand, along the shores of which the walker proceeds for nearly an hour and a half. The point of greatest interest then appears in the famous Smorslat glacier from out of the centre of which the sharp pinnacle of Store Bjorne (Great Bear) mountain rises with peculiar effectiveness. The route lies across the glacier close to the rock walls of the mountain and affording fine panoramic views on every side. On leaving the Glacier, accommodation is found at the Norwegian Tourist Club Hut on the shores of the Leirvand. Here a fresh series of " climbs " are available for those who seek them, but the walking tourist will proceed to the Spiterstulen Saeter under the Goldhoppig mountains, the highest in Norway. From here a fine glacier excursion across the Heilstugubral and the Memurubral to Memurubad on Lake Gjende, brings the walker into fresh country and the well-known mountain lake region. Views were shown, freely illustrating the walk up to this point.

The panoramic views from the highest parts of the Smorstab glacier and the seracs and crevasses on the Memurubral were all of interest and indicated something of the solitary grandeur of the country. Lake Gjende now boasts a motor boat and the trip to the end of the lake to the Gjendebod

"Club Hut" is most conveniently made in this way. From here the path leads to the Svartdal, with another fine glacier, and the Thorfindel to Nybod on Lake Bygdin. Again by motor boat the traveller can proceed to Eidsbrigaren and so to Tyinholmen on Lake Tyin. From Trindehang, which adjoins, the ascent of the Skinegg mountain for the fine panoramic view is strongly recommended, but the finest walk of the tour lies before the pedestrian in crossing the glaciers of the Uranaastind, ascending this commanding peak and descending to Skogadolsboen. The top of the tind is an eerie place consisting of a narrow ridge with a drop on either side of some 3—4,000 feet into the valleys below.

At Skogadolsboen, the very heart of the climbing district, the Norwegian Touist Club maintains an excellent hut. The interior view shown by the lecturer, depicting an aged guide, seated by the primitive corner fireplace with the implements of his craft near at hand, was specially selected for favourable comment. From Skogadolsboen the return was made to Tyin Lake through the wild and little visited Uradal —a valley which for a long time was blocked by the gigantic debris of a shattered mountain side—called locally "Ure." The walker has a toilsome struggle for hours across this remarkable catastrophe of nature.

The journey down Tyin Lake can now be accomplished by motor boat, and the journey homewards commenced on reaching the great trunk road connecting Christiania and Laerdal by proceeding in either direction. The lecturer came out of the country by Nystuen, Maristuen, Borgund, Laerdal, Gudvangen, and Vossevangen, and thence by railway to Bergen. It is worthy of note that the first week of September is not too late for Norway, and on the high plateau the autumn tints will amply compensate for the shorter days. The lecturer arrived back in England on the 18th of September.

LIST OF MEMBERS.

APRIL, 1916.

HONORARY MEMBERS.

1877 SIR DANIEL MORRIS, K.C.M.G., M.A., D.Sc., D.C.L., F.L.S., Boscombe.
1880 CHARLES ROWLEY, M.A., Manchester.
1886 TATTERSALL WILKINSON, Roggerham, near Burnley.
1895 RT. HON. LADY O'HAGAN, Pyrgo Park, Essex.
1895 L. B. DE BEAUMONT, D.Sc., F.L.S., Methwold, Norfolk.
1899 J. LANGFIELD WARD, M.A., Bath.
1904 FRED H. HILL, St. Annes-on-Sea.
1910 A. WILMORE, D.Sc., Colne.
1911 SIR JAMES MACKENZIE, M.D., LL.D., London.
1911 REV. CANON H. D. RAWNSLEY, M.A., Keswick.
1915 FRED. J. GRANT, J.P., Oak Bank.
1915 DR. BROWN, Capetown.

MEMBERS.

ANDERSON, GEORGE, 247, Manchester Road.
ARMISTEAD, HERBERT, 61, Sackville Street, Brierfield.
ARMISTEAD, HERBERT, 53, Scott Park Road.
ASHWORTH, EDWIN, J.P., Thorn Hill.
ASHWORTH, JAMES, 33, Bridge Street.
ASPINALL, ROBERT, J.P., 116, Todmorden Road.
ATKINSON, ROBERT, 35, Thursby Road.

BALDERSTONE, JOHN H., 11, Fair View Road.
BALDWIN, SAMUEL, Park Hill, Pasture Gate Avenue.
BARDSLEY, ARTHUR, 127, Woodgrove Road.
BARDSLEY, R. S., 237, Manchester Road.
BELL, ARTHUR, 57, Ormerod Road.
BELL, THOMAS, 57, Ormerod Road.
BELLINGHAM, ARTHUR A., Rose Hill Road.
BIRKETT, M., Bank Parade.
BIRTWELL, J. E., 4, Woodfield Terrace, Brierfield.
BIRTWISTLE, G. R., M.A., B.Sc., Edenholme, Park Avenue.
BOWKER, JAMES, 101, Manchester Road.
BRADSHAW, HARRY, 396, Padiham Road.
BROXUP, R. E., Bank Royd, Scott Park Road.
BURNLEY, The Rt. Rev. the Bishop of, (Dr. Henn), Reedley Lodge.
BURROWS, J. T., Highcliffe, Queen's Park Road.
BURROWS, W. H., Bur Royd, Colne Road.
BUTLER, CHARLES, 93, Woodgrove Road.
BUTTERFIELD, JOHN, Inglewood, Rose Hill Road.
BUTTERFIELD, THOMAS, 2, Appletree Carr.

CATLOW, HOWARD, 23, Scott Park Road.
CHORLTON, JOHN, Carr Road.
CLEGG, HERBERT, Overpark, Queen's Park Road.
CLEGG, W. T., 195, Coal Clough Lane.
COLLINGE, EDGAR S., Brooklands Avenue.
COLLINGE, JOHN S., J.P., Park House.
COLLINGE, T. ALLEN, Greenfield.

Crabtree, J. H., 91, Ormerod Road.
Crook, Campbell, 236, Manchester Road.
Crook, Thomas, J.P., Rosedale.
Crossley, Arthur, 9, Carlton Road.

Dickinson, Archibald, 71, Colne Road.
Dickinson, G. S., 3, Brooklands Avenue.
Drew, Alexander, J.P., Holme Lodge.

Eastwood, Arthur, 59, Ennismore Street.
Emmott, Hartley, J.P., Lodge Villa, Brunshaw.
Evans, W. G., Denstone, Scott Park Road.

Fielden, Smith, 15, Lark Street.
Flack, W. H. D., J.P., Brookside.
Flintoff, John, 112, Hollingreave Road.
Foster, Thomas, Newlands, Ightenhill Park.
Fullalove, A. L., B.A., LL.B., Cornfield.
Fullalove, W. T., Cornfield.

Gardner, James, M.B., C.M., 1, Piccadilly Road.
Garner, Edwin, 82, Blackburn Road, Padiham.
Grant, A. E., Castle Hill, Towneley.
Grant, Bertram D., Oak Bank.
Grant, F. J., J.P., Oak Bank.
Grant, John Murray, 35, Lansdowne Street.
Grant, Walter M., 42, Ashfield Grove, Reedley.
Grant, W. Lewis, 14, Palatine Square.
Green, George, Palace House.

Halstead, Edmund, J.P., Rokeby, Colne Road.
Hargreaves, F. A., J.P., 7, Park Avenue.
Hargreaves, Luther, 57, Scott Park Road.
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G. A. WOOD, M.A.

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